ACC-4000 Intermediate Training

DAY 1

Addressable System Overview

ACC-4000 Hardware Overview

ACC-4000 System Operations
- Converters

Message Editor
- Definition
- Message Creation
- Message Transfer

ACC-4000 System Operations
- Message Management

DAY 2

ACC-4000 System Operations
- Headend Equipment
- Pay-Per-View
- Impulse Pay-Per-View
- Pay Service Loader

DAY 3

ACC-4000 System Operations
- Two-Way Operations
- Reports

System Maintenance Recommendations
- Daily, Weekly and Monthly Tasks

Review

ACC-4000 Intermediate Training

General Instrument

Table of Contents

Appendix

ADDRESSABLE SYSTEM OVERVIEW

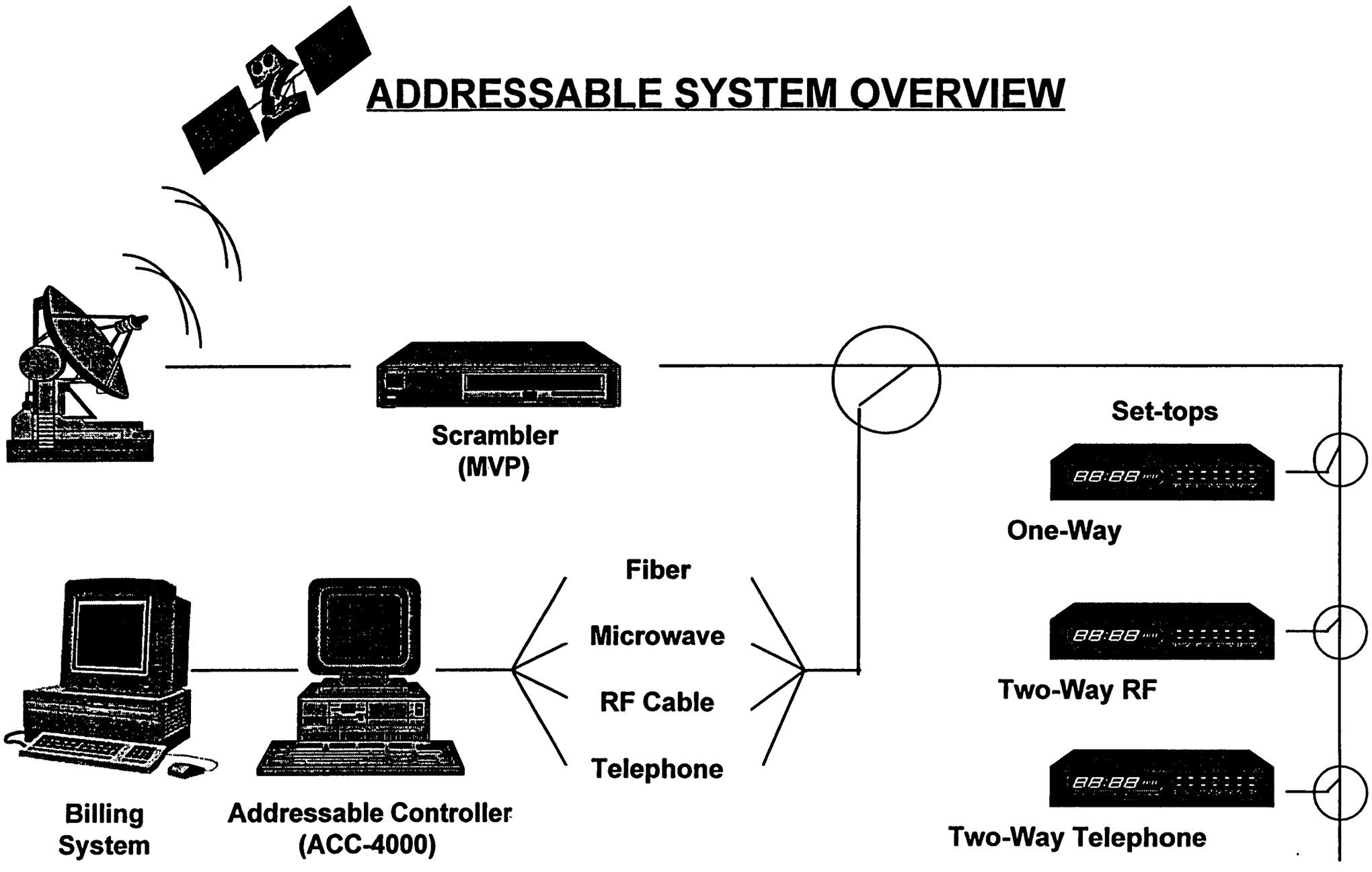
General Instrument

REQUIREMENTS FOR ADDRESSABILITY

- **Addressable Controller**
- **Scramblers/Encoders** MVP II
- **Data Path Equipment** -
- **Set-top Terminals** - CFT 2000 - Baseband

NOTES:

ADDRESSABLE SYSTEM OVERVIEW



NOTES:

ADDRESSABLE CONTROLLER

- Control of Set-tops and Distribution Equipment
- Collocated or Non-collocated
- Graphical and Character-based Interfaces
- Standalone or Tandem Operation
- Support of One-way, Two-way and DCR Set-tops

NOTES:

MVP-II SCRAMBLER

- **Addressable Control**
- **Memory**
- **Multiple Scrambling Modes**
- **Internal Clock (Battery Backed)**
- **Control of Purchaseability (IPPV)**

NOTES:

MVP-II SCRAMBLING MODES

- **Sync Suppression**

  - **6 dB** DPT37 only works on sync suppressed & older models
  - **10 dB**
  - **Clear**
  - **Dynamic/Scene Change**

    - **Bi-mode/Tri-mode Video Inversion**

- **Audio Shift** means you can privitize your signal
  Base band only

- **Specials** encryption only for piracy
  standard / enhanced encryption

NOTES:

150 modes of scrambling

Stan-Durey / will go on site to change conv encryption for piracy

1-800-523-6678

DATA PATH EQUIPMENT
BASEBAND DATA

Mod In light on Front
Front of unit light should always be on

- **DS-16** — one input 16 outputs to MVP's

  - **Data Splitter**
  - **One input/sixteen outputs**
  - **Active device**
  - **One rack unit**

- **TDC-16** Trans Data Combiner Combine Data Back to the ACC 4000

  - **Data Combiner**
  - **Sixteen inputs/one output** goes to input of ACC 4000
  - **Active device**
  - **One rack unit** - 1 3/4 inches per unit module

1 event is a Que

NOTES:

DATA PATH EQUIPMENT
RF

DATA COMMANDER

- **DCA-CR Data Commander Frame**

  - **3 rack units** – 5 ¼ inches
  - **8 application module slots**

- **DCA-PC Data Commander Power Controller**

  - **1 required for each frame**
  - **Generates timing/clock signals**

- **DCA-MF FM Band Modulator**

  - **88 MHz to 108.5 MHz in 100 KHz steps** means you can go up Like 108.5 - 108.6 - 108.7
  - **56 dbmv output level (adjustable)**

- **DCA-DF FM Band Demodulator**

  - **88 MHz to 108.5 MHz**

NOTES:

DATA PATH EQUIPMENT
RF

DATA COMMANDER

- **DCA-MS Sub-band Modulator**

  - 8.0 MHz to 10.4 MHz in 100 KHz steps
  - 56 dbmv output level (adjustable)

- **DCA-DS Sub-band Demodulator** RF/Data converts RF to Data

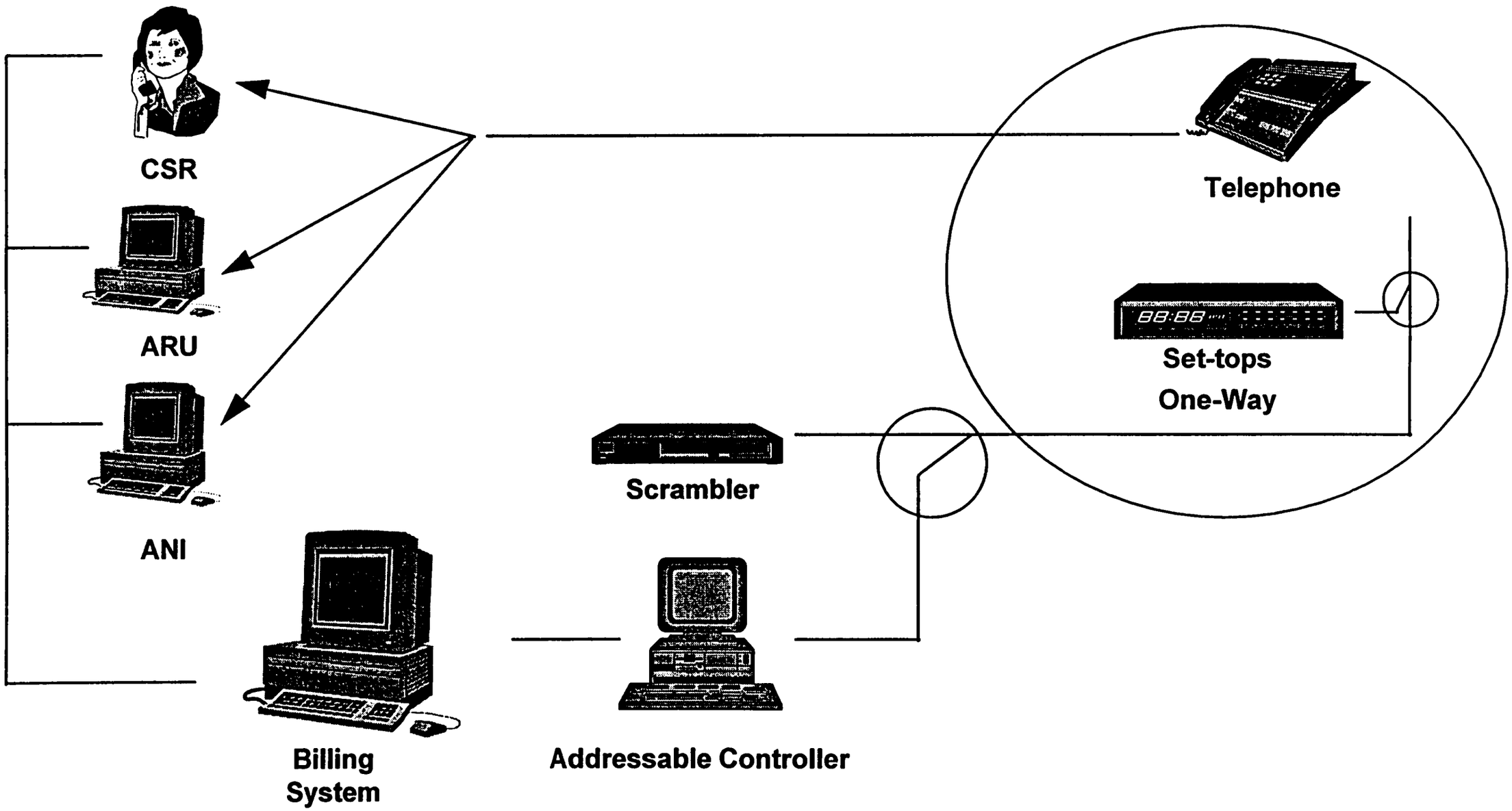
  - 5.0 MHz to 11 MHz in 100 KHz steps 8,9 Return

- **DCA-SE Squelch Eliminator** Filters out noise

  - Contains digital pattern recognition circuitry
  - Used in demod/remod applications
  - Always used before data input to controller from RF path

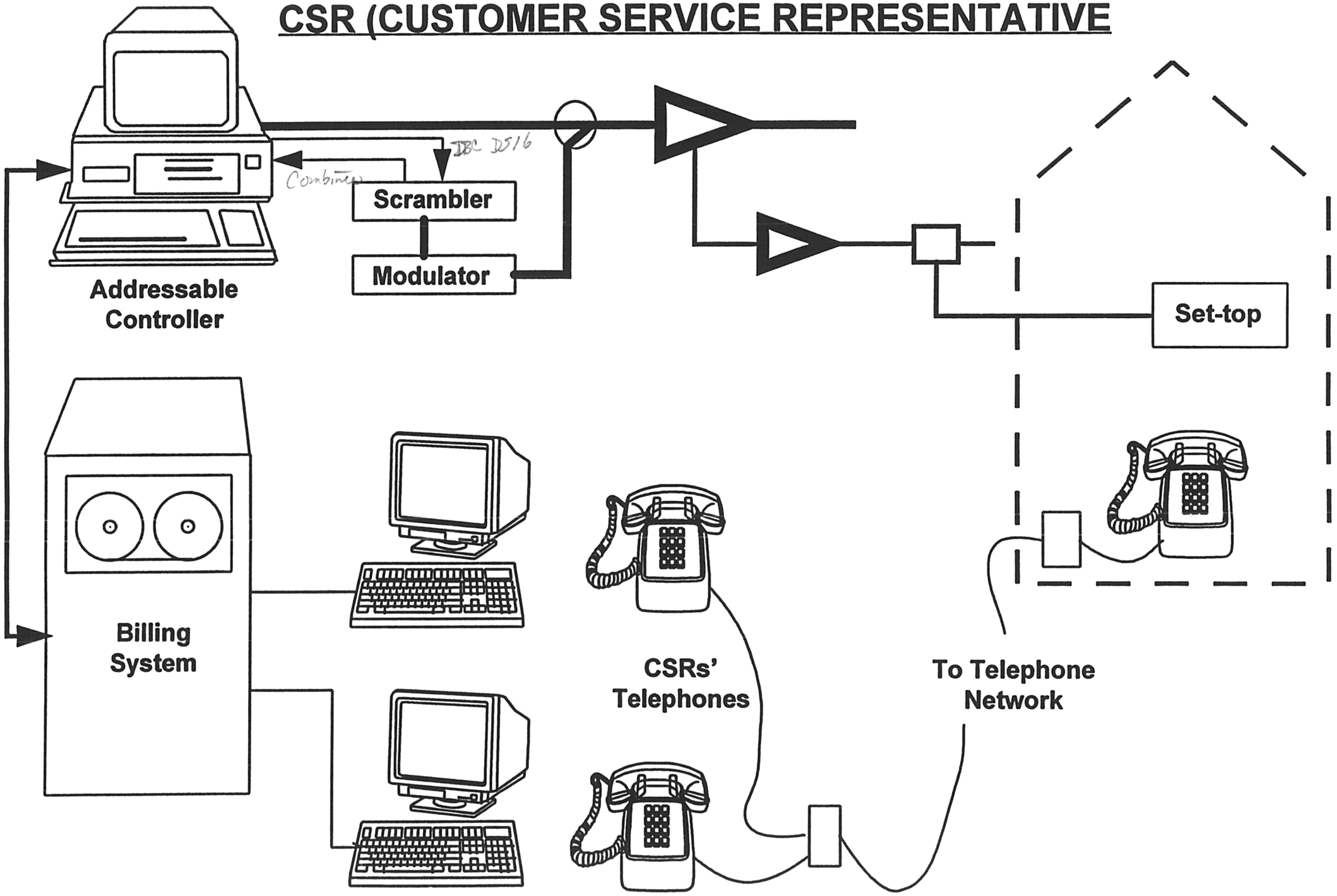
NOTES:

PAY PER VIEW


CSR
ARU
ANI
Billing System
Addressable Controller
Scrambler
Telephone
Set-tops
One-Way

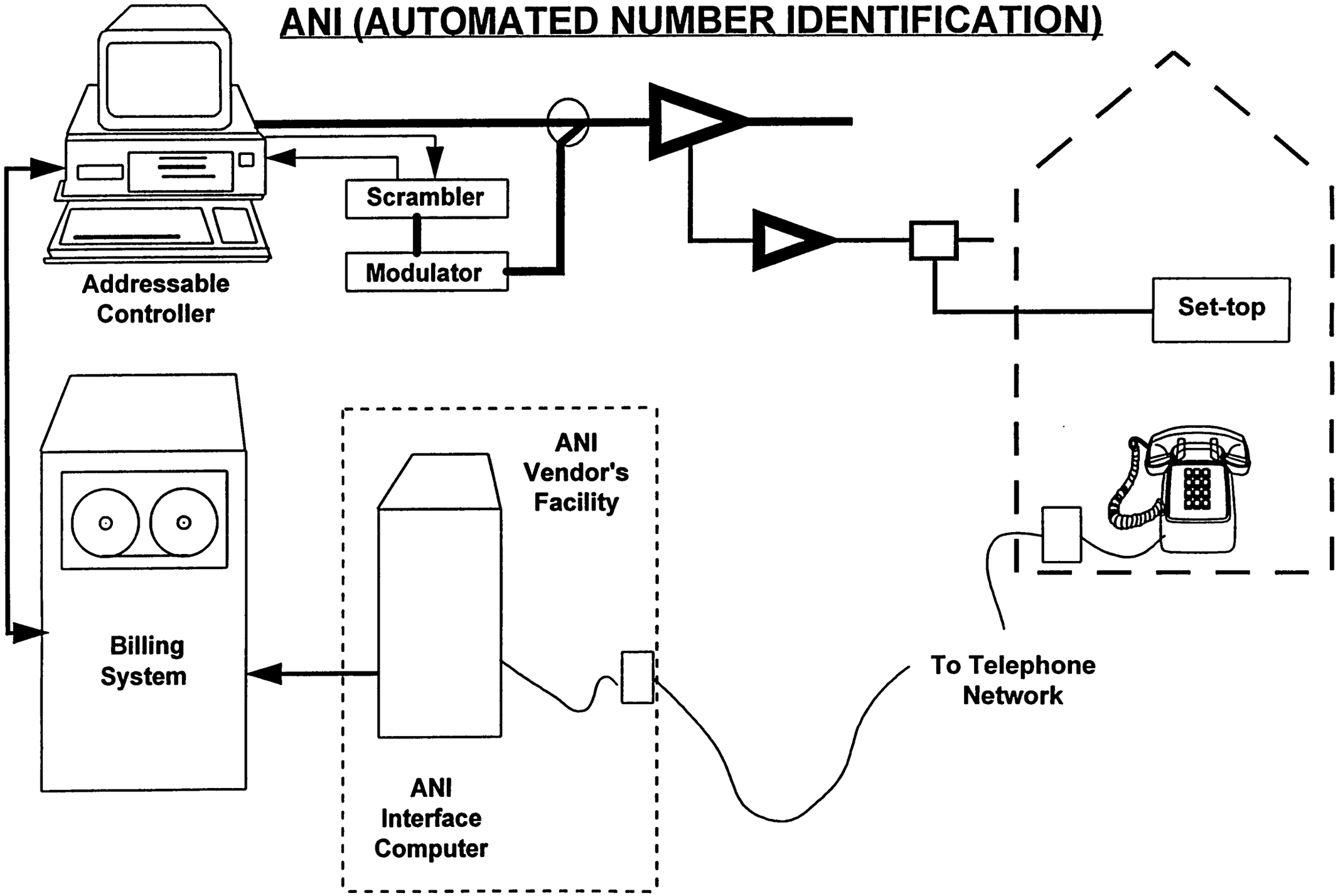
NOTES:

PAY PER VIEW ORDERING
CSR (CUSTOMER SERVICE REPRESENTATIVE



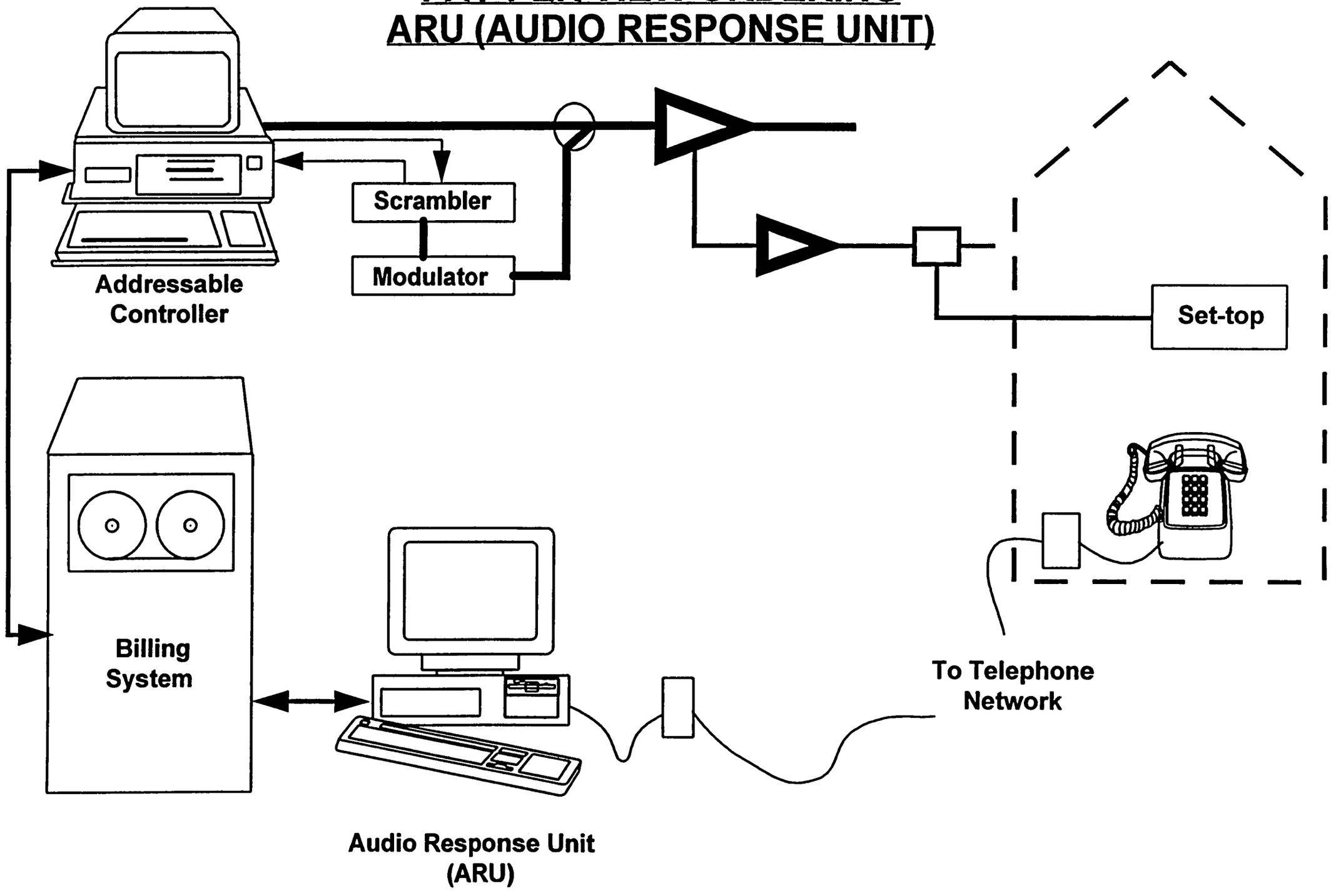
NOTES:

PAY PER VIEW ORDERING
ANI (AUTOMATED NUMBER IDENTIFICATION)



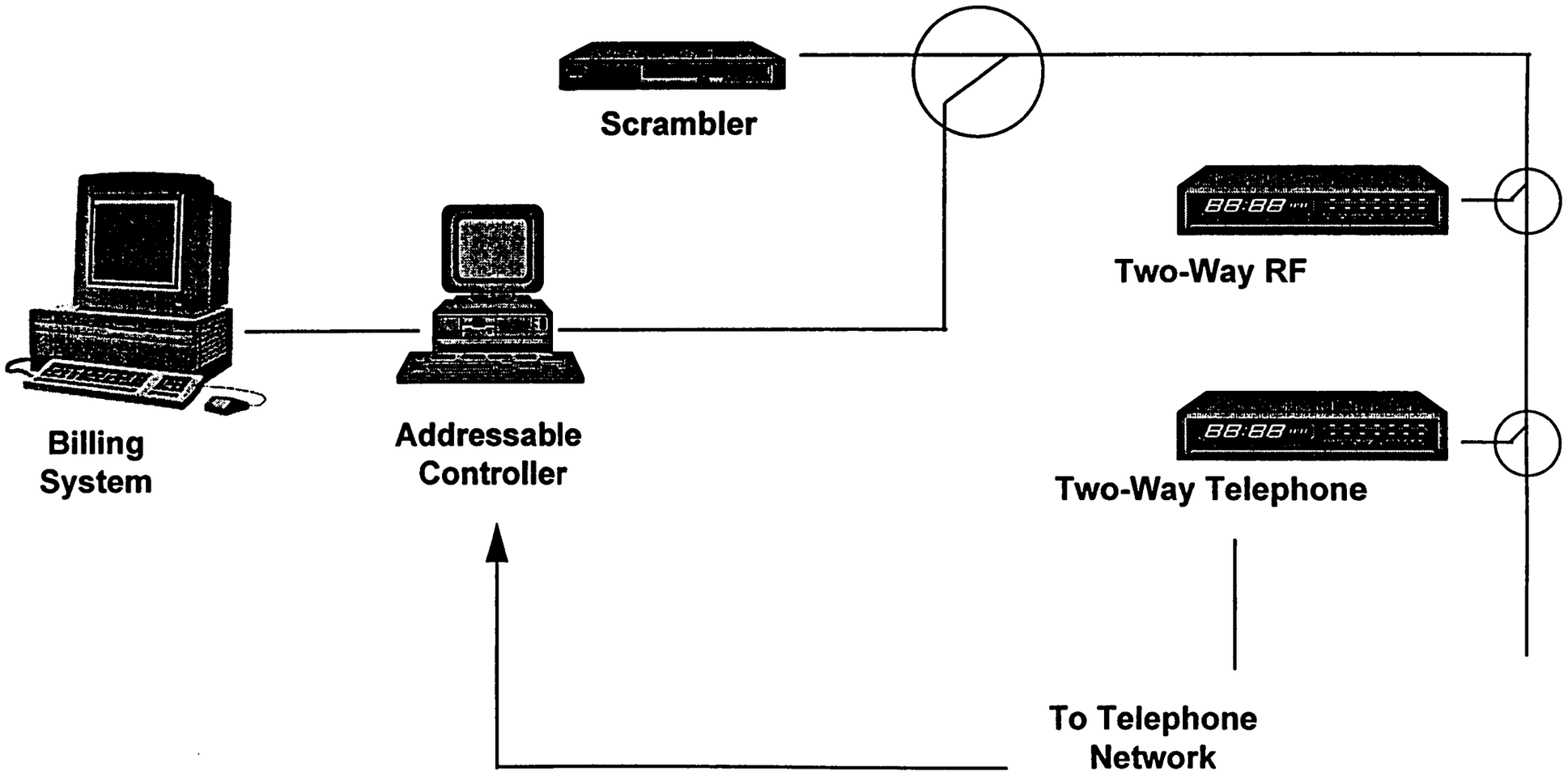
NOTES:

PAY PER VIEW ORDERING
ARU (AUDIO RESPONSE UNIT)



NOTES:

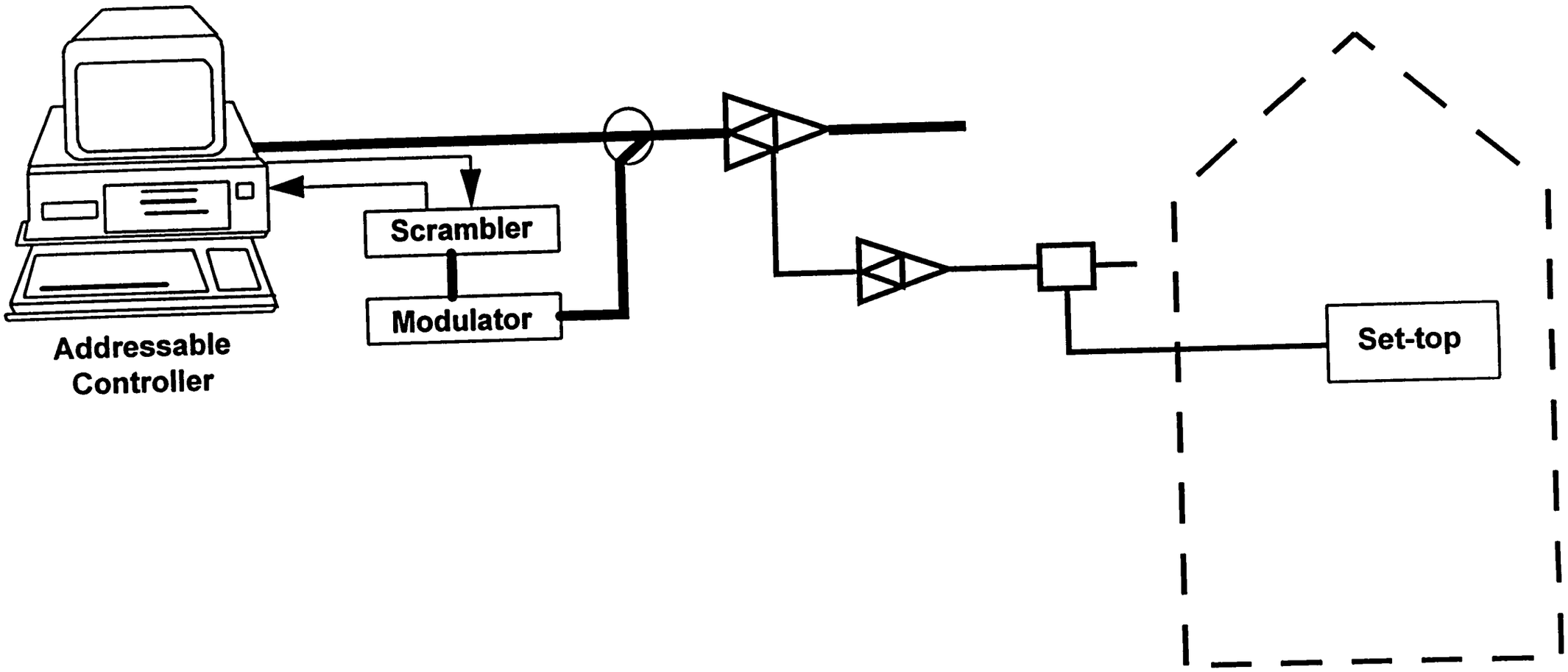
STORE & FORWARD
IMPULSE PAY PER VIEW



NOTES:

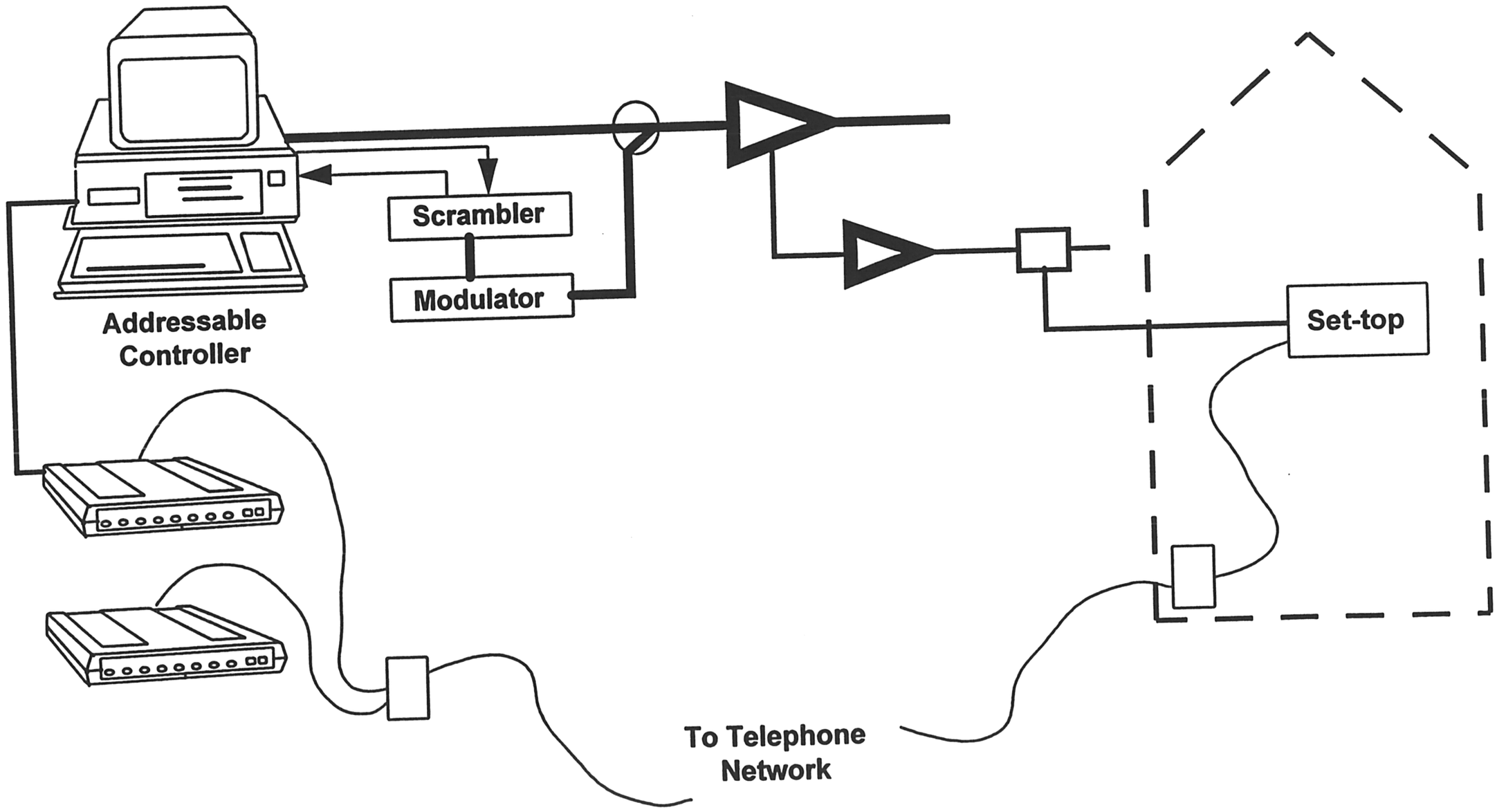
Data collection file stores all the purchase
uploading clears out all the purchase for billing

IMPULSE PAY-PER-VIEW
STARVUE



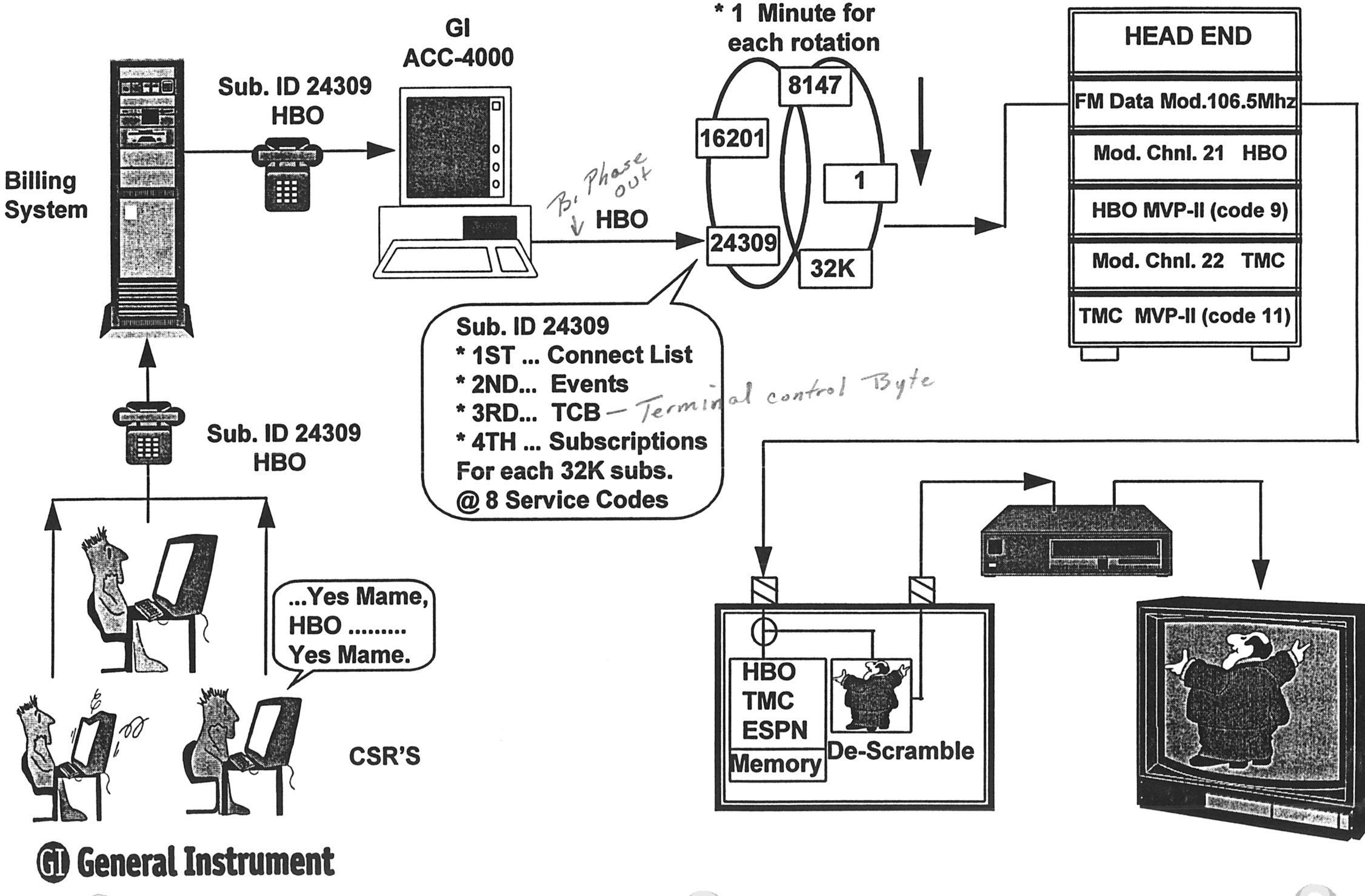
NOTES:

IMPULSE PAY-PER-VIEW
STARFONE - phone module on back of converter



NOTES:

ADDRESSABLE SYSTEM OVERVIEW



GI General Instrument

NOTES:

13.92MBZ - Oscilloscope

Channel Diagnostics

F1

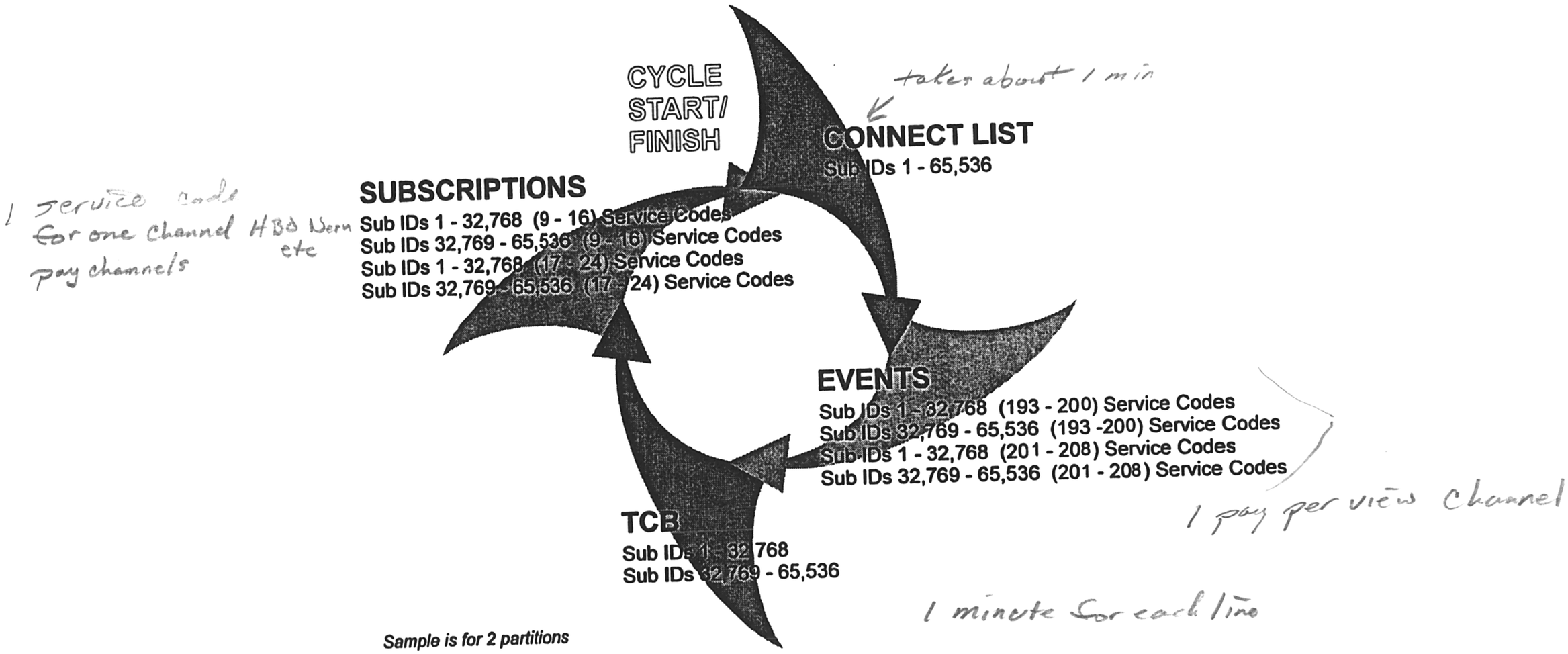
Clear Channel	C0	CE ← No Data
Scrambled Channel	50	5E
Barker Channel	b0	bE

out of band Data (OOB Data)

TCB / All Features

CFT2000 one way	Type 30	Converter Default Record
CFT2000 Phone way	Type 31	
CFT2000 two way	Type 32	

THE CYCLICAL DATA STREAM



Sample is for 2 partitions

NOTES:

Depend on how large your database is. (the event will slow down billing and vice versa)

The cycle is stopped everytime billing comes on

each event has to have a service code added to it.

1 pay per view channel (193-208) really 16 channels 12- are used additional 4 are called bounce tags

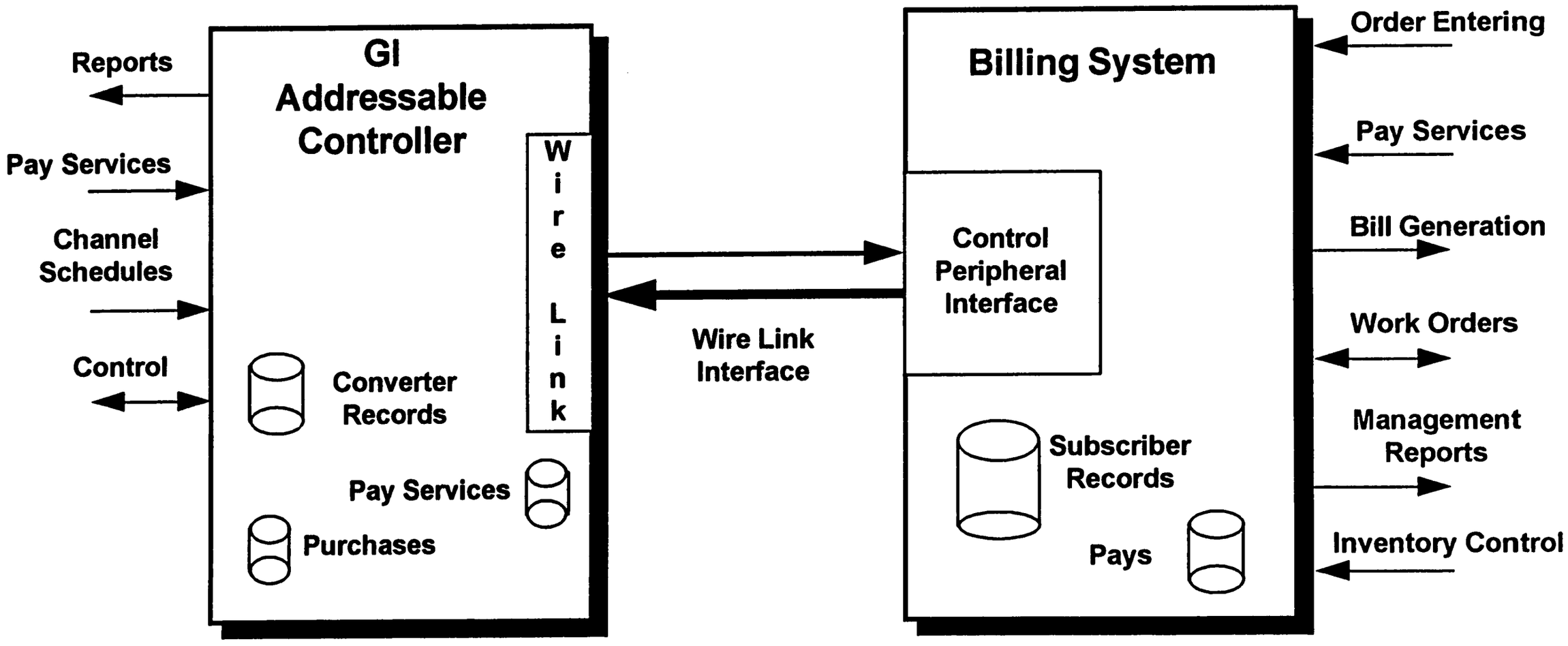
(12) 2 hour movies

Service codes are in groups of eight

Service code		
193	2/20/96	14:00 2hrs
194	2/20/96	16:00 2hrs
195	2/20/96	18:00 2hrs
⋮		
again reappears here		

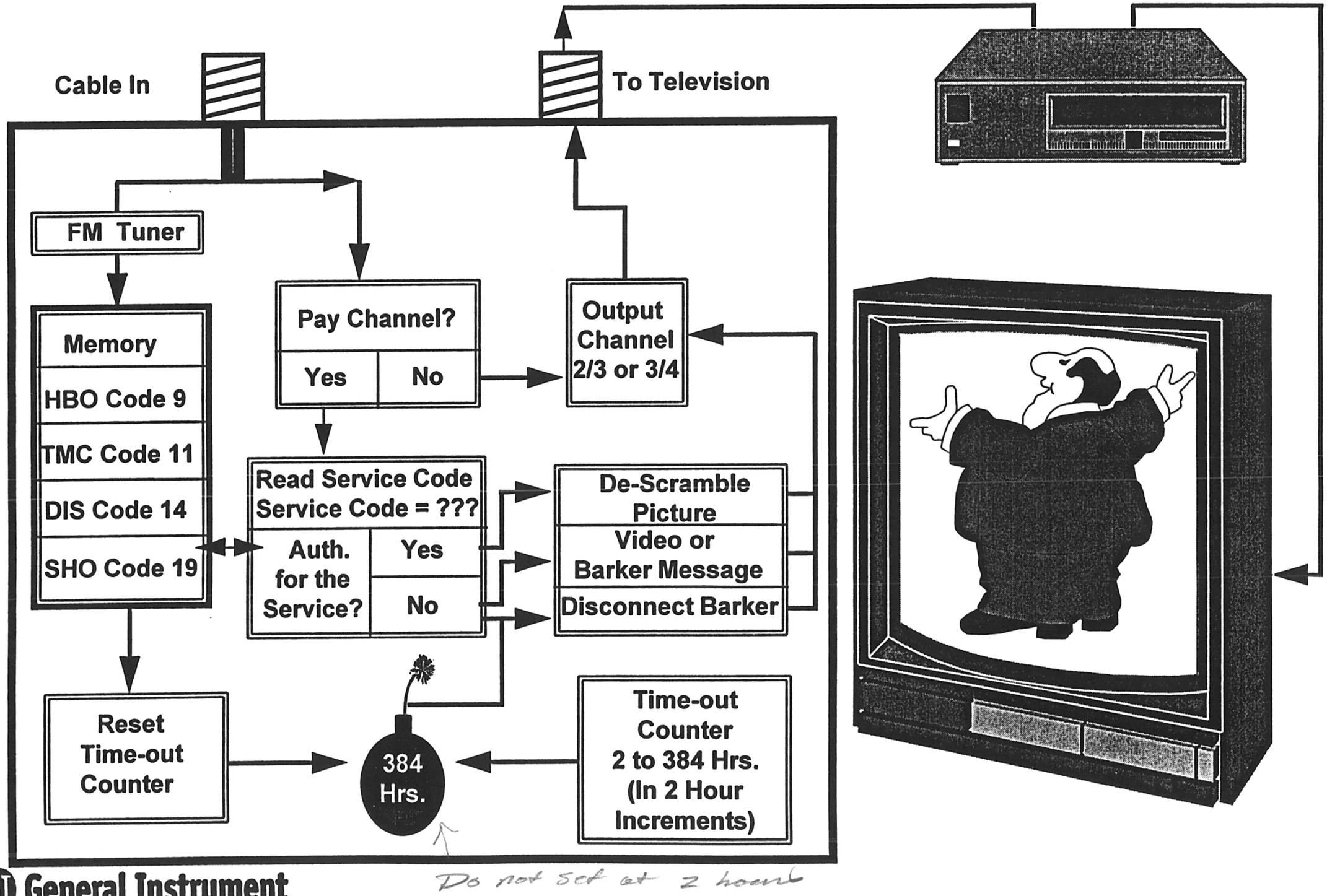
When that service code is used up it gets reapplied back down the line

BUSINESS SYSTEM GATEWAY



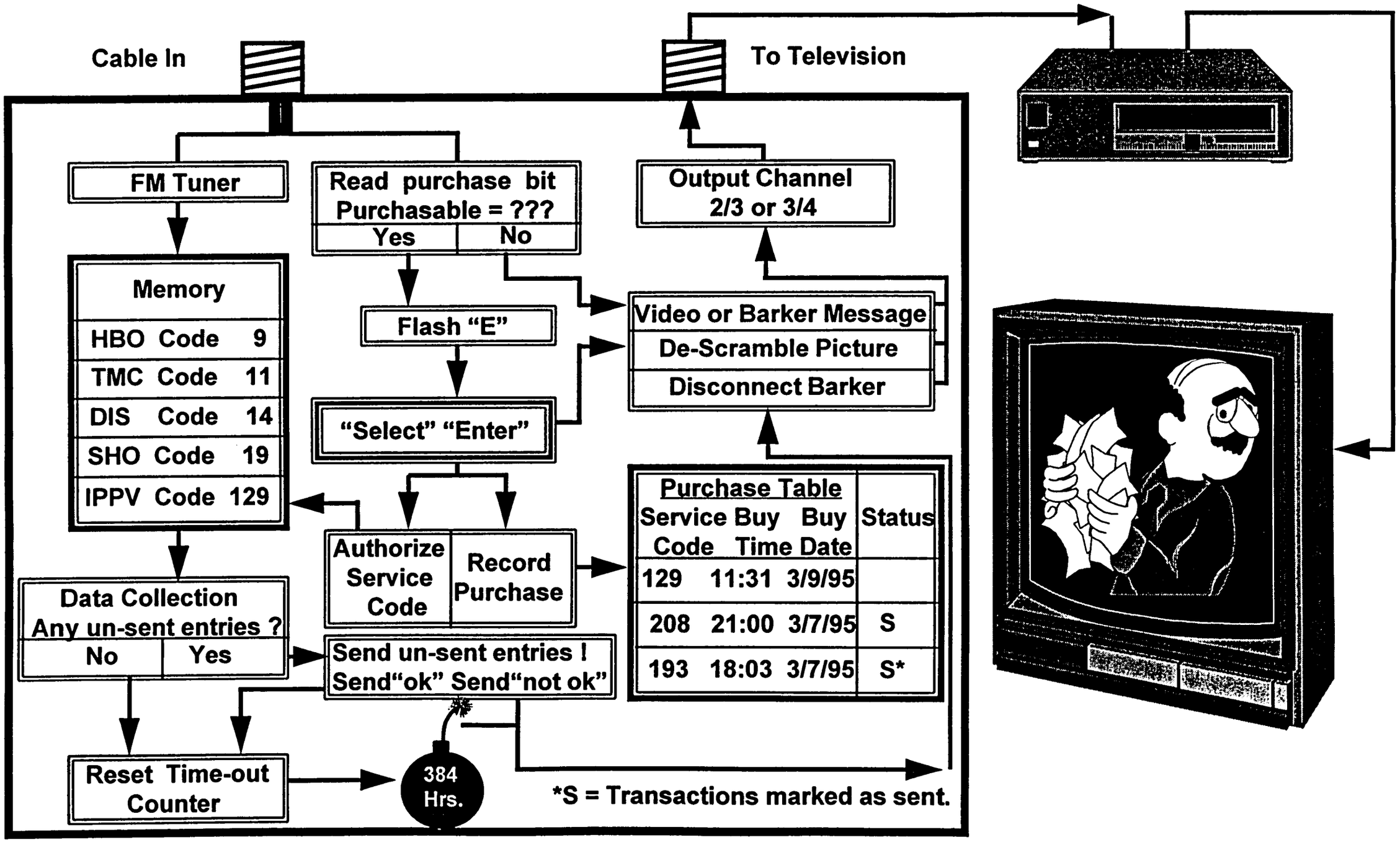
NOTES:

CONVERTER OPERATIONAL OVERVIEW



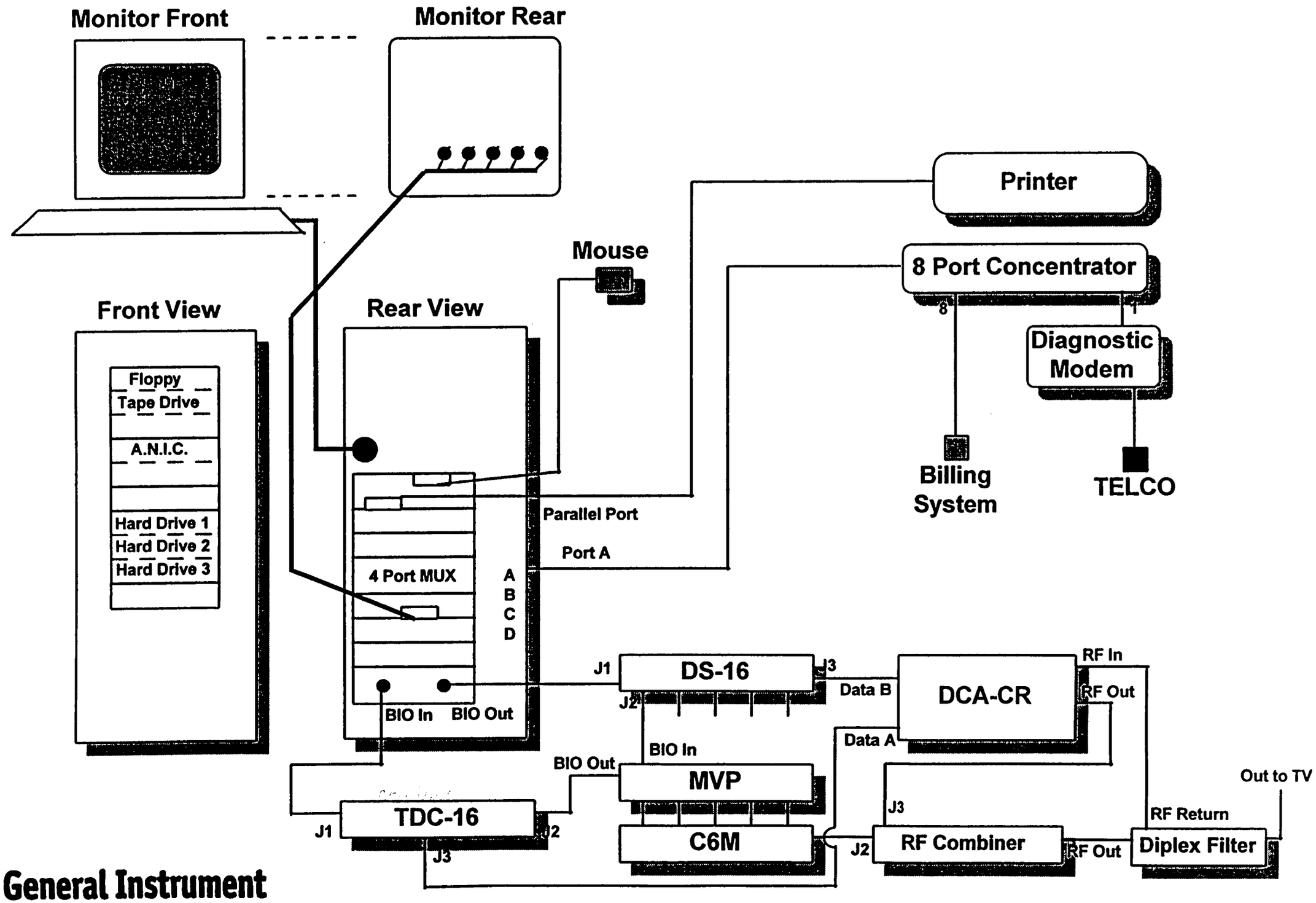
GI General Instrument

IPPV CONVERTER OPERATIONAL OVERVIEW



NOTES:

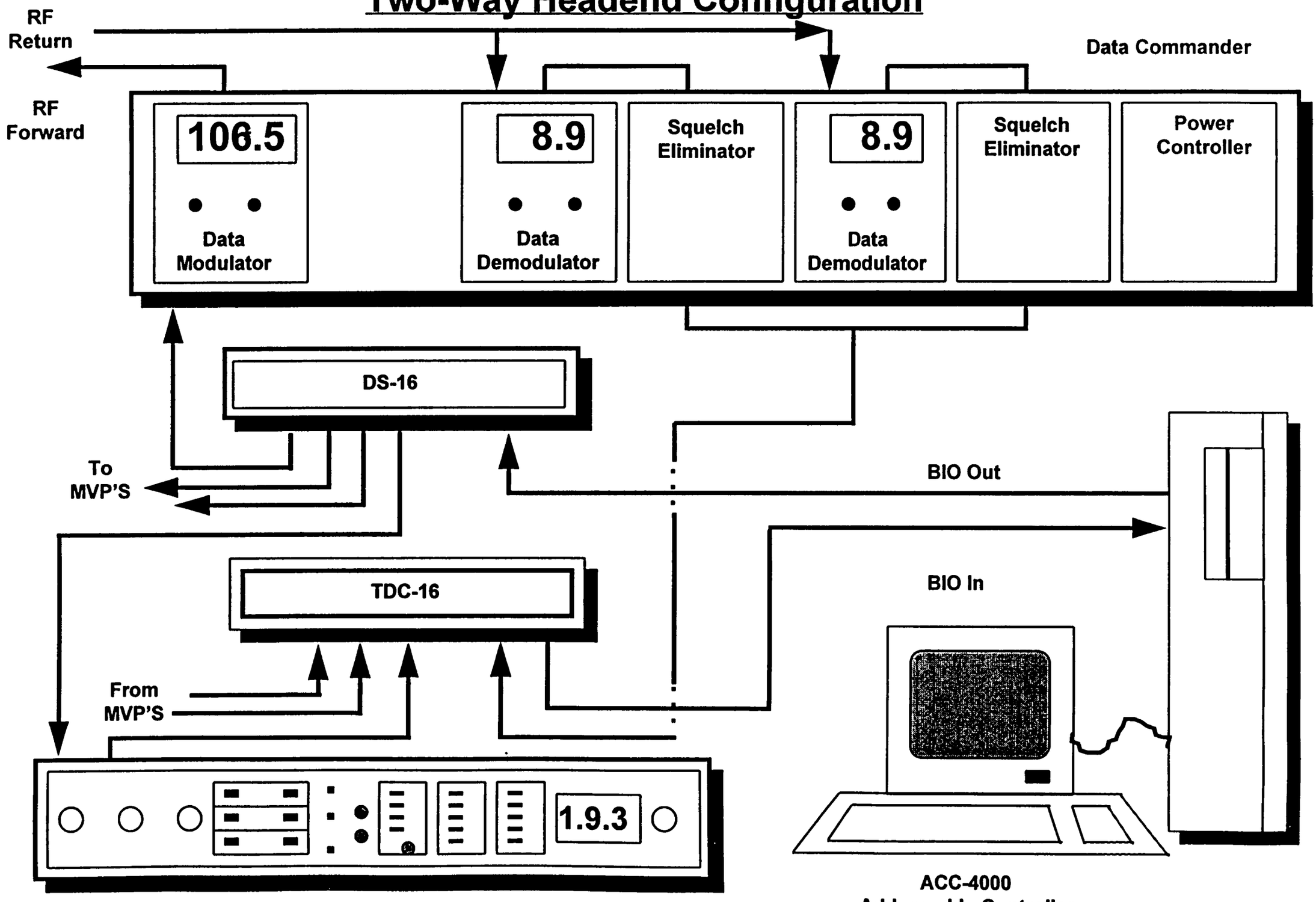
ACC-4000 ADDRESSABLE CONTROLLER SYSTEM DIAGRAM



SYSTEM HARDWARE

General Instrument

Two-Way Headend Configuration

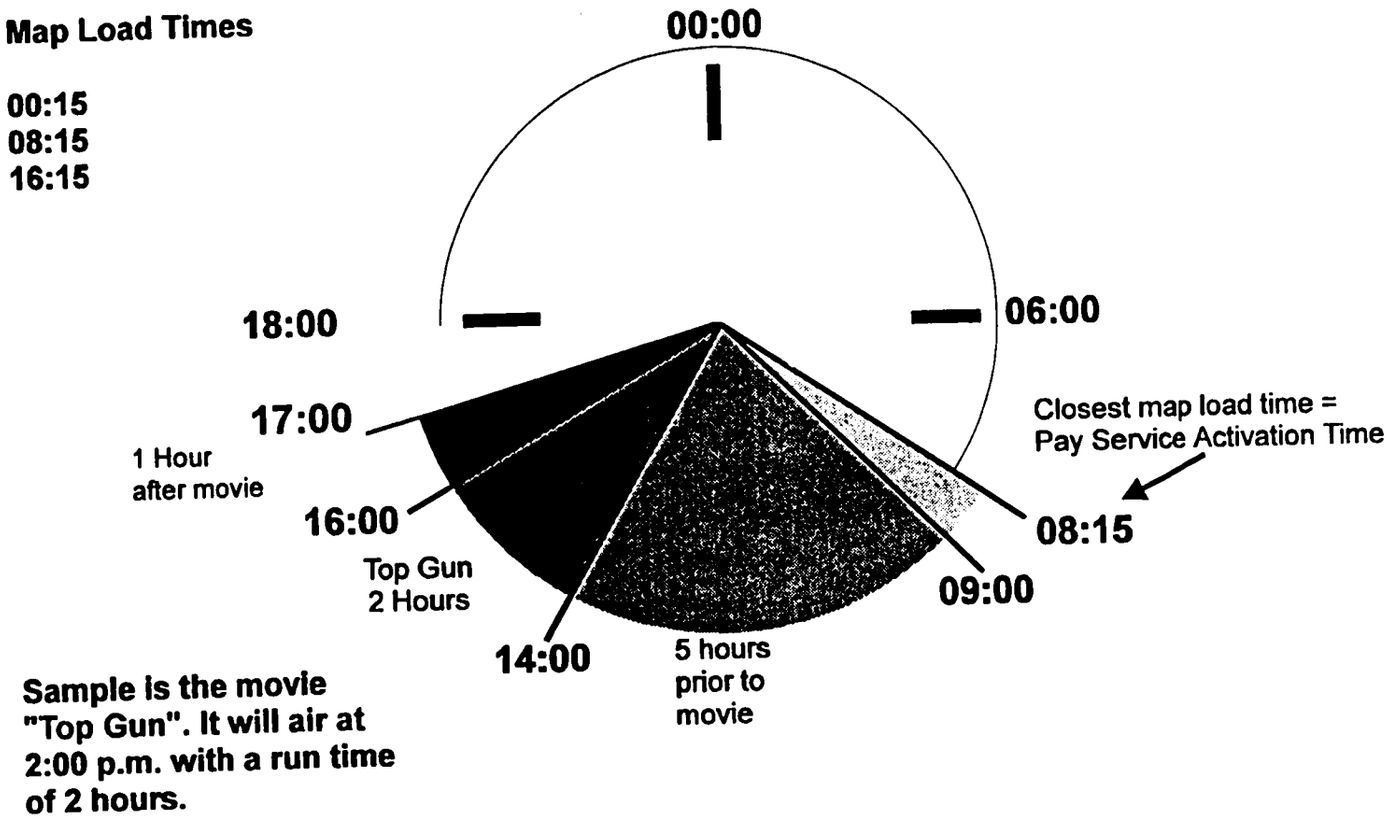


NOTES:

NOTES:

NOTES:

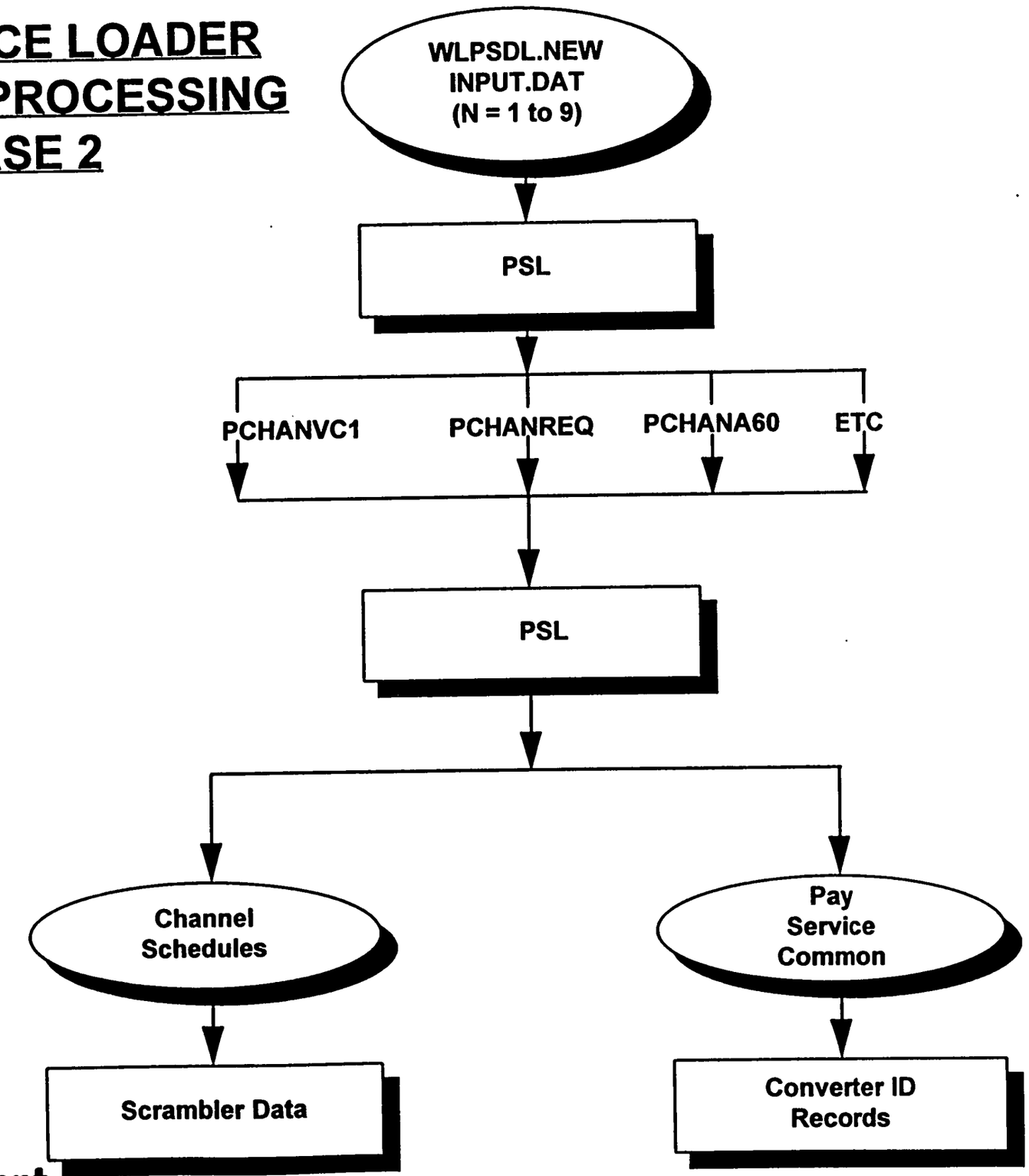
PAY SERVICE LOADER WINDOW GENERATION



5 Hours + Movie Duration + 1 Hour

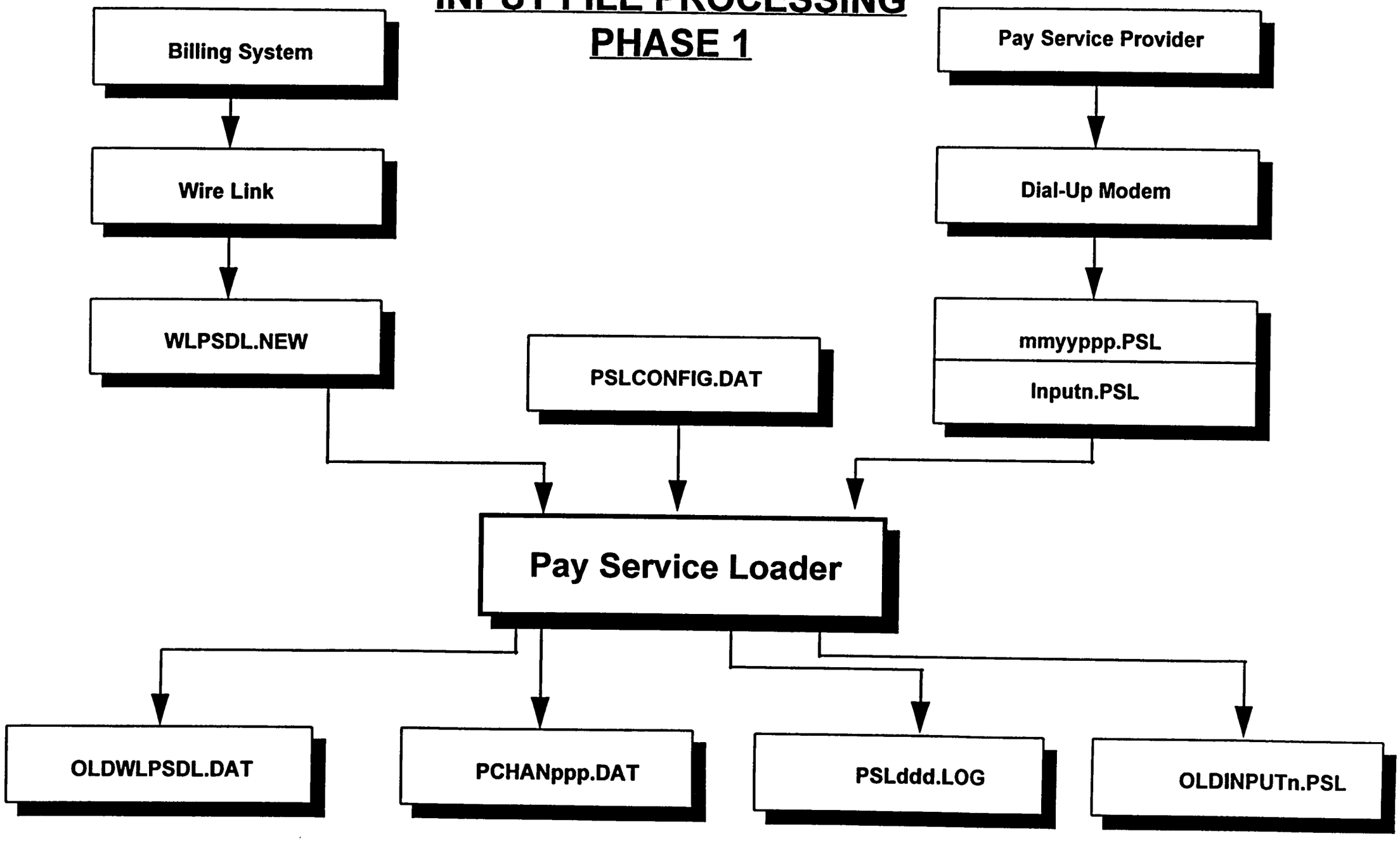
NOTES:

PAY SERVICE LOADER INPUT FILE PROCESSING PHASE 2



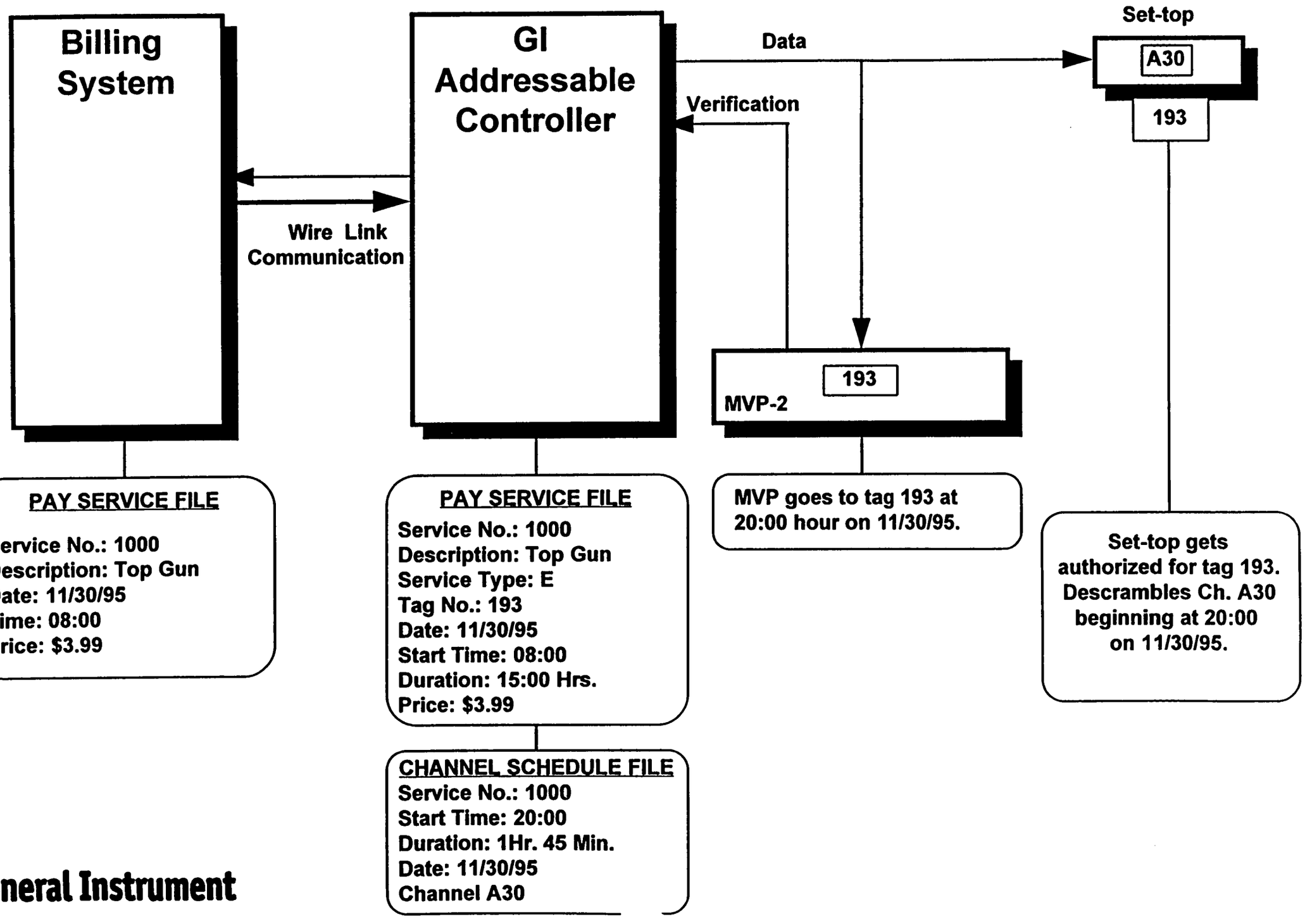
NOTES:

PSL SERVICE LOADER INPUT FILE PROCESSING PHASE 1



NOTES:

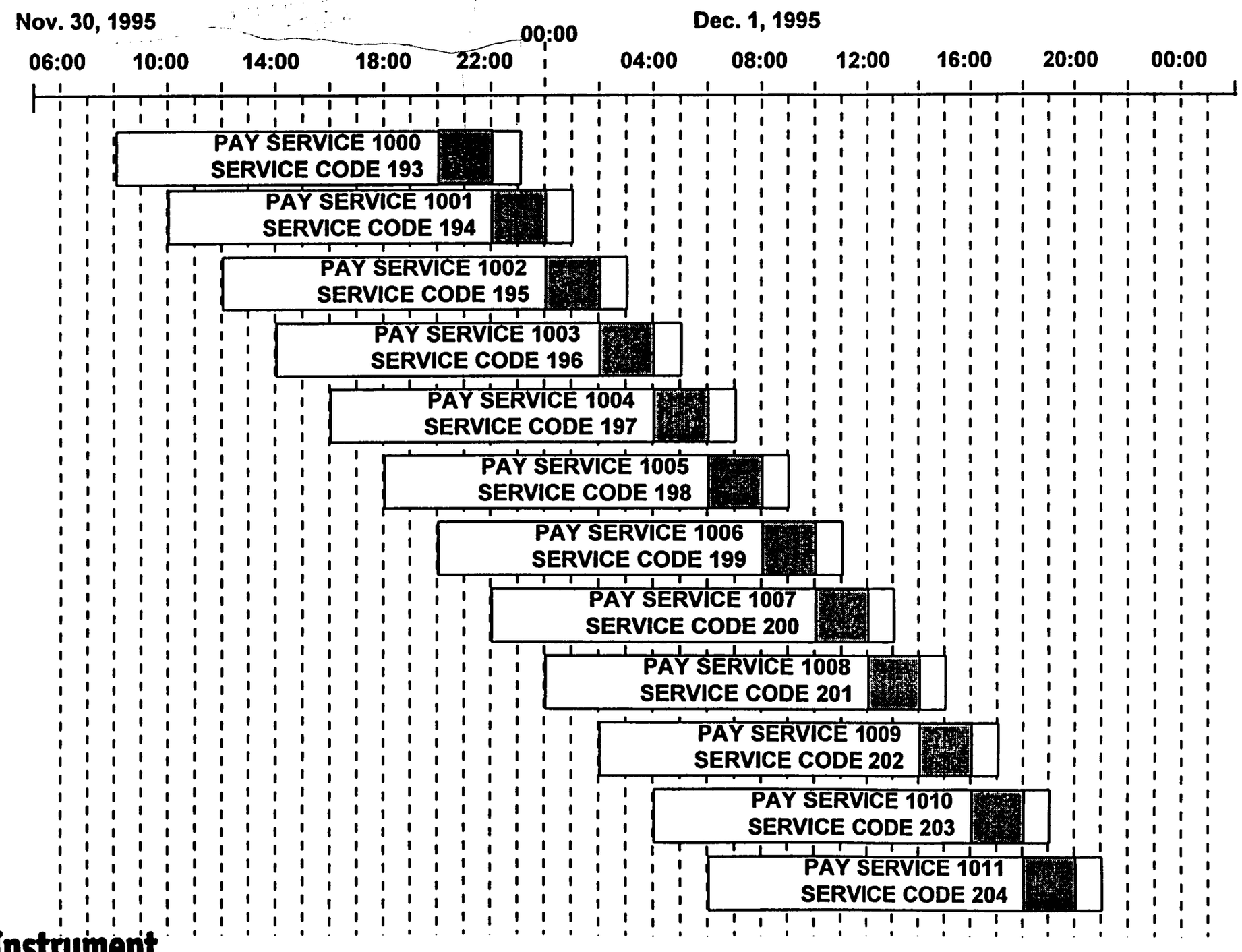
PPV SYSTEM AUTHORIZATION DIAGRAM



GI General Instrument

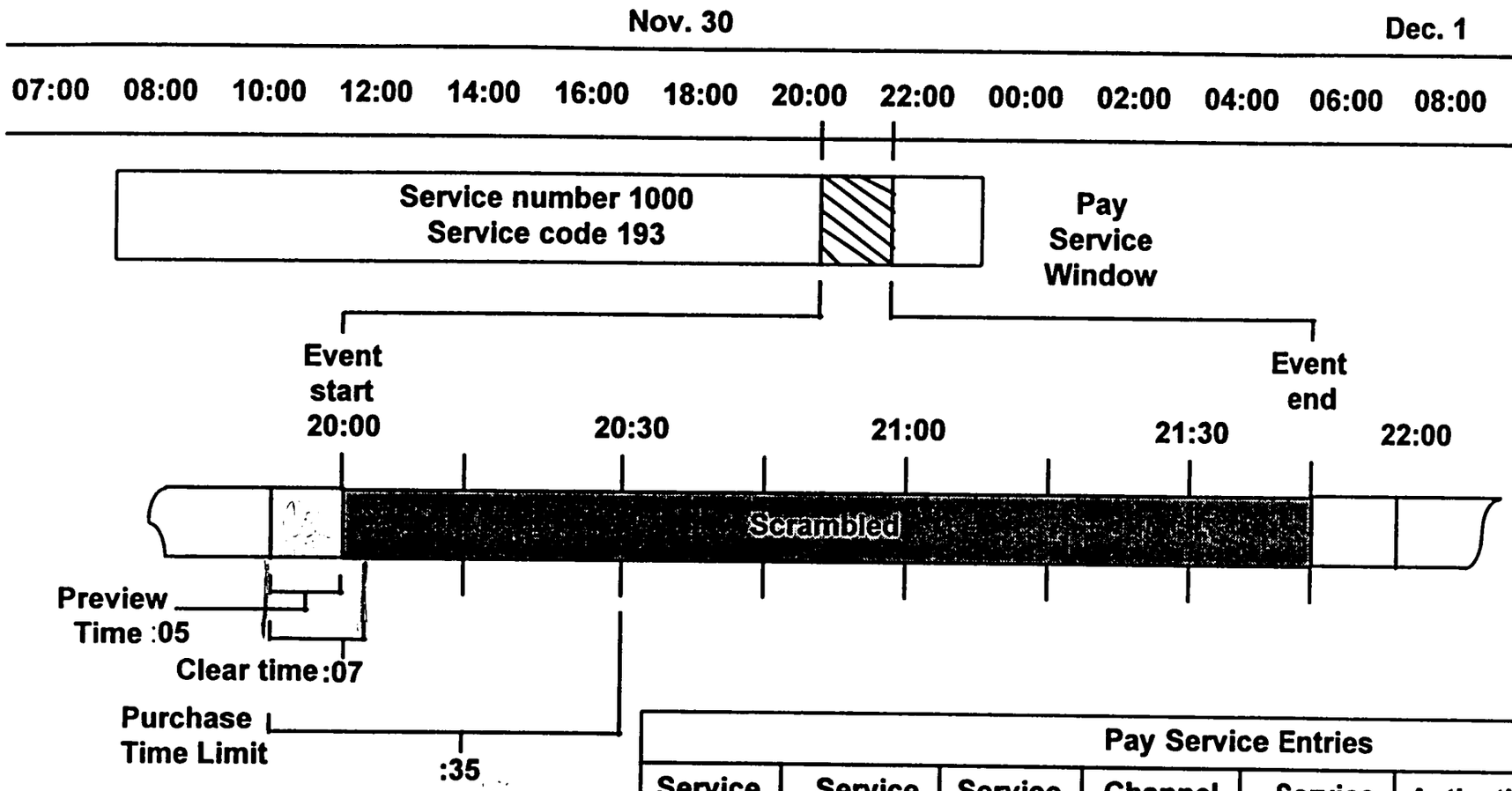
NOTES:

PPV MULTIPLE EVENT DIAGRAM



NOTES:

IPPV EVENT DIAGRAM

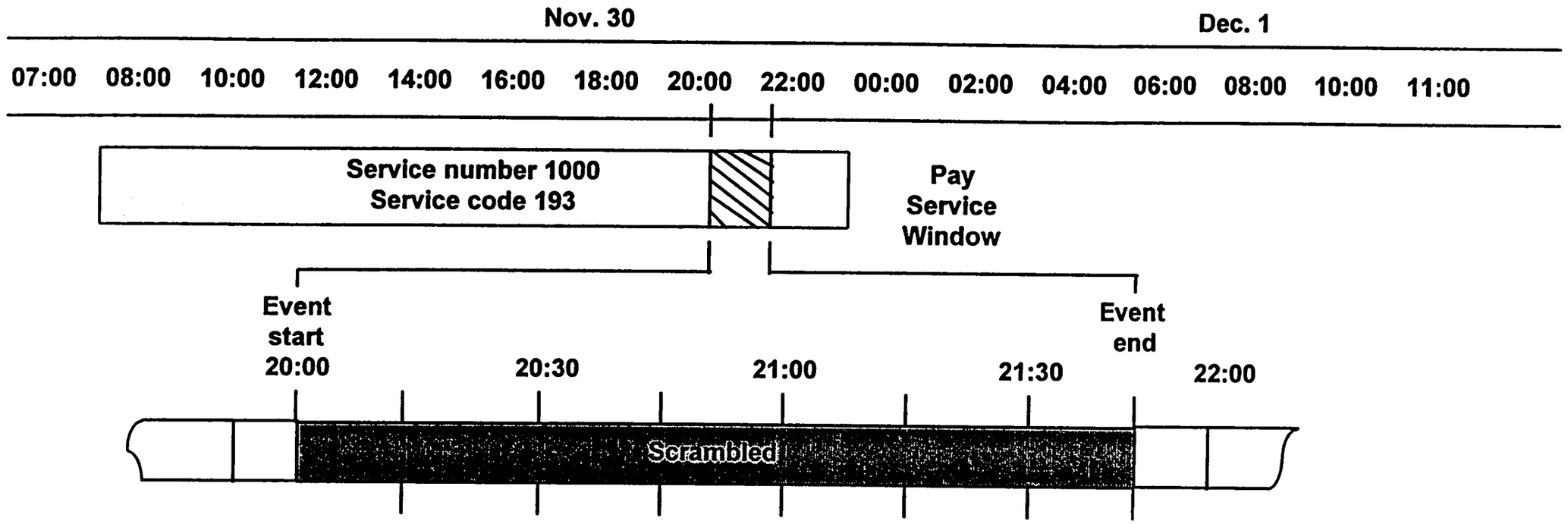


Pay Service Entries							
Service Number	Service Type	Service Code	Channel Number	Service Name	Activation Time	Activation Date	Duration
1000	E	193	30	Top Gun	08:00	11/30/95	15:00

Channel Schedule Entries										
Start Time	Start Date	Service Number	Duration	Clear Time	Purchase Time	Scramble Mode	Impulse Purchase	Video Inv	Morality Rating	Audio Inv
19:55	11/30/95	1000	2:05	:07	:35	0/4	Y	N	PG	N

NOTES:

PPV EVENT DIAGRAM



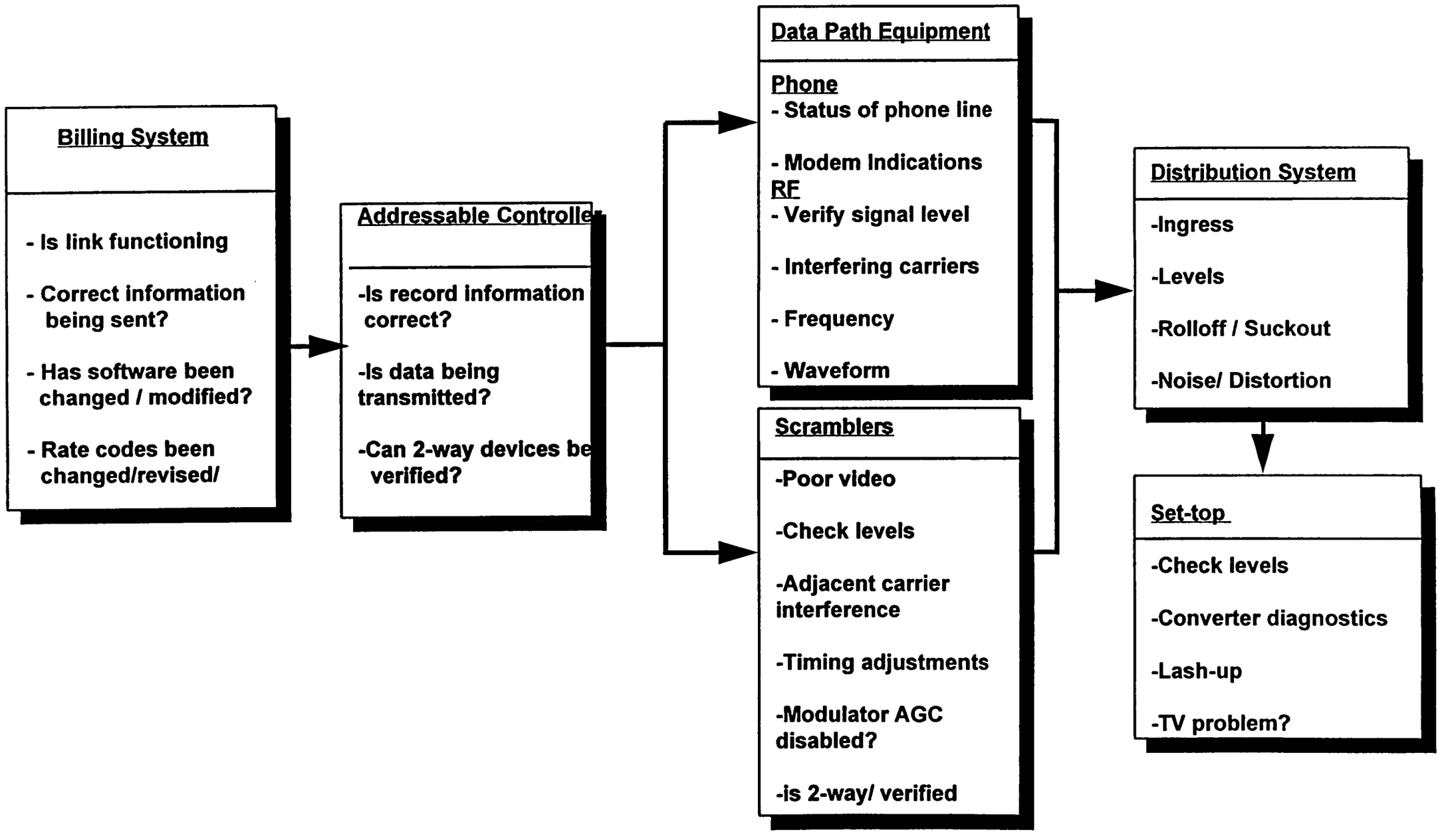
Pay Service Entries							
Service Number	Service Type	Service Code	Channel Number	Service Name	Activation Time	Activation Date	Duration
1000	E	193	30	Top Gun	08:00	11/30/95	15:00

Channel Schedule Entries										
Start Time	Start Date	Service Number	Duration	Clear Time	Purchase Time	Scramble Mode	Impulse Purchase	Video Inv	Morality Rating	Audio Inv
20:00	11/30/95	1000	1:45	:00	:00	0/4	N	N	PG	N

PAY SERVICES

General Instrument

TROUBLESHOOTING BLOCKS



TROUBLESHOOTING

General Instrument

NOTES:

NOTES:

APPENDIX

General Instrument

UNIX COMMANDS

cat ***files***
Display the contents of a file.

cd ***directory***
Change directories. (move from one directory to another)
Omit directory entry to move to your home directory.

chmod *[augo] [+-=] [rwx] files* or **chmod** *number files*
Set file permissions

cp *source_file target_file* or **cp** *files directory*
Copy a file or group of files

find *directories* **-name** *name* **-print**
Display all files that match *name.*

grep *[options] text [files]*
List lines in file that match text string.

ls *[options] [file]*
Display contents of a directory.

pg *[options] [files]*
Display text one screenful at a time.

ps *[options]*
Check status of processes.

pwd
Print working directory.

rm *[options] files*
Delete a file or files.

su or **su** *name*
Change to root login name or to another login name.

Variable entries are italicized.
Fields marked off with brackets [ ] are optional. Italicized text without brackets is mandatory.

ACRONYMS

ANI	Automatic Number Identification
ANIC	Addressable Network Interface Card
ARU	Audio Response Unit
CDC	Control Data Channel
CFT	Consumer Friendly Terminal
CSR	Customer Service Representative
DCR	Digital Cable Radio
DS/E	Digital Scrambler/Encoder
EEPROM	Electronically Erasable Programmable Read Only Memory
EPROM	Erasable Programmable Read Only Memory
GUI	Graphical User Interface
IBB	In-Band Barker
IPPV	Impulse Pay Per View
MVP	Modulating Video Processor
NABTS	National Assoc.of Broadcasters & Television Services
NTSC	National Television Systems Committee
OOB	Out-of-Band
OSD	On Screen Display
PPV	Pay Per View
PROM	Programmable Read Only Memory
PSL	Pay Service Loader
RAM	Random Access Memory
ROM	Read Only Memory
SDC	Service Data Channel
TLE	Transmission Line Equalizer
TNA	Telephone Network Adapter
UHF	Ultra High Frequency
UPS	Uninterruptable Power Supply
VBI	Vertical Blanking Interval
VHF	Very High Frequency

SYSTEM ADMINISTRATION AND MAINTENANCE

This section covers recommended procedures that should be performed at regular intervals to ensure database integrity. All activities provide a log file of some kind that should be reviewed. Errors detected in the review process should be corrected in a timely fashion.

The tasks outlined here represent the minimum set of procedures required to ensure that your ACC-4000 and overall cable system activities are working properly. The tasks are organized by the following time headings:

Daily

Weekly

Monthly

Quarterly

Before a major Pay-Per-View (PPV) event

After loading new schedules

Daily

Check Logger Window/Viewerrs.

You should look through the Logger window three times a day to check Logger window messages and to correct errors. It is particularly important to check and resolve wire link errors. Do this by:Looking at the wire link statistics printed a few minutes before midnight. Check the report for variations, problems, and areas for performance improvement.

The Logger window shows you error, warning, and informational messages. Use the viewerrs utility if you want to display only error and warning messages.

Viewing by Date Range

If the Logger window does not cover the required time frame, you can read through the logger file by using the method described below. Note all the errors you find, and resolve all errors after looking through the file. Plan to spend from 20 minutes to several hours checking the messages, depending on the errors found. View the messages using this procedure:

- Open a 132-size window.
- At the % prompt type **cd data** and press the Enter key. To verify that you are in the correct directory, type **pwd** and press the Enter key. A line appears displaying:
    - *usr/acc4000/data*
- To display the logger file generated since the last ACC-4000 reboot, at the % prompt type **pg acc4000_X.log**. This starts a utility called pg (pronounced page) that allows you to page through the text as you view it.
- Since the file may be quite long, you will want to start with the last logged item you reviewed the day before. The pg utility has a search feature, denoted by a (/) slash. Please note that the search feature is case-sensitive. For example, you can search for a particular date by using this format:
    - **/14-Feb-95 17:34:46**
- Press Enter to advance a screen forward and press the – (minus) key to return to the previous screen. At the end of the file you automatically exit the pg utility and return to the % prompt.
- Close the 132-size window by typing exit and pressing the Enter key.

DAILY (continued)

How to Use the "viewerrs" Utility

Use the viewerrs utility if you want to see only the error and warning messages recorded in the logger file and not see the informational messages. To use this utility do the following:

- Open a 132-size window.
- At the % prompt type **viewerrs** and press the Enter key. On-screen instructions describe how to navigate through the messages.
- To display a description of the viewerrs options, type **viewerrs -h** at the % prompt. You may want to use the printer options that allow you to send the output of the file to your printer.
- After viewing the error and warning messages from the logger file, exit the file and close the 132-size window by typing **exit** and pressing the Enter key.

Check PSL's Daily Activity

Checking the Logger window for errors in PSL downloads and printing PSL logs takes about five minutes. Check to make sure that Pay Service Loader (PSL) woke up and processed the adds and the deletes for the day. Also check specifically for the proper processing of any input files PSL finds. Fix errors and submit new input.

To print the PSL log:

- Open a 132-size window.
- At the % prompt type **cd data** and press the Enter key.
- At the % prompt type **lp pslxxx.log** (where **xxx** stands for the day of the week: mon, tue, wed, thu, fri, sat, or sun) and press the Enter key.
- Each day print the previous day's PSL file. On Monday, print the logs for the previous Friday, Saturday, and Sunday. Review the logs and research any errors found.
- When the log prints, type **exit** and press Enter to close the 132-size window.

DAILY (continued)

Database Backup

Remember to change the backup tape every day. It is important to remember to use a different tape for each day of the backup cycle, and to label each tape clearly; for example: "Wednesday Backup. Insert this tape on Tuesday."

Check to make sure that the Database Backup Starting and Database Backup Complete messages are logged. If the backup process did not complete successfully, a window with a message appears on the console. If you cannot resolve the problems, call 1-800-537-7653.

Perform and Review Data Collections (Two-way and FONE-way Sites)

Use the following procedures either to check your daily FONE-way data collection or to perform a two-way data collection.

Check the Data Collection

FONE-way Systems

Plan to spend five to ten minutes looking at the Data Collection Summary Reports. The time required by step two and step three depends upon the number of collections and problems reported.

1. Review the Data Collection Summary Reports printed or logged the previous midnight.
2. Print the Purchase Data Collection Reports (see *System Operator User Guide* Section 13, *Reports*).
3. Resolve all errors and not founds.

DAILY (continued)

Two-Way Systems

1. Perform a Data Collection (see *System Operator User Guide* Section 3, *Impulse Operations*). Make certain to set the operations mode to range. The time it takes for a data collection varies, based on the number of two-way converters installed. This can be time-consuming on a large two-way system. If the Data Collection is not successful, call 1-800-537-7653.
2. Print the Purchase Data Collection Reports (see *System Operator User Guide* Section 13, *Reports*).
3. Resolve all errors and not founds.

DBPRINTDC

The DBPRINTDC utility provides a way to verify the information in the billing system and the ACC-4000. Plan to spend ten minutes looking at the DBPRINTDC report. Run this report from the Reports Menu (Main ⇒ Reports ⇒ Database Utilities ⇒ DBPRINTDC). This report prints the data collection results. Use this report to verify the billing system data verses the data collected by the ACC-4000.

Purchase Uploads

If the Data Collection is successful, run Purchase Uploads from the billing system via the wire link for both two-way and FONE-way systems. Plan to spend about ten minutes doing the uploads. This task may take longer if you encounter errors and not founds.

Weekly

Reboot the system

The system will be down for about 10 minutes when you reboot the system. See *System Operator User Guide* Chapter 12, *Control and Configuration Utilities* for rebooting instructions.

Check Disk Free Space

Checking disk space takes you about one minute. If any disk shows 90% or more usage, you must delete all unnecessary and redundant files to ensure continued proper system operation. If you need assistance, call 1-800-537-7653. See *System Operator User Guide* Chapter 9, *Data Files* for instruction on how to check the disk space.

Run Database Authorization Optimization

Run the Authorization Table Optimization feature of the Database Optimization utility to improve system performance. This feature takes you about one minute to start and ten minutes to run. See *System Operator User Guide* Chapter 9, *Data Files* for instruction on how to run all of the database optimization utilities.

Run the Master Summary Non-responding Converters Report

Run the Master Summary Non-responding Converters Report weekly on two-way systems. This report takes ten minutes to run. This report is usually given to the plant operations manager for analysis and resolution of problems.

Run the Chronic Non-Responding and Telephone Non-participating Reports

Run both the Chronic Non-responding and Telephone Non-participating Reports for two-way and FONE-way systems. Plan to spend about ten minutes checking the reports. These reports are usually given to the plant operations manager for analysis and resolution of problems.

Plan to spend ten minutes looking at the DBSORTPS report. Run this report from the Reports Menu (Main ⇒ Reports ⇒ Database Utilities ⇒ DBSORTPS). You want to run this report well before the end of the day on Friday. Check your channels to make sure that you have enough programs scheduled to go through the weekend. You may want to do this procedure more than once a week if you have a lot of PPV events.

Monthly

System Backup

The system backup takes a minute to start and 45 minutes to run. The system will be down during this time. Always do a system backup as soon as possible after you have new software installed. See *System Operator User Guide* Chapter 9, *Data Files* for instructions on how to do a system backup.

DBSUMMARY Report

The DBSUMMARY Report takes a minute to start and about 30 minutes to run. If the report shows errors, fix the problems and run the report again. Repeat the process until there are no more errors on the report. Keep the reports for reference purposes for at least six months. See *System Operator User Guide* Chapter 13, *Reports* for instructions on how to run this report.

Purchase Data Collection (non-fast poll)

Use the non-fast poll Purchase Data Collection for two-way systems. This data collection takes a minute to start and up to one full day to run. It skips the fast poll portion of the data collection and asks every converter for purchase data. Compare the number of non-responding converters with results from your last non-responding converters poll. Compare the number of non-responding converters and the number of purchases with your last data collection results. If there are significantly larger than normal purchases or more converters responding, you may have fast poll timing problems that need correction. When you start the Purchase Data Collection, make certain to set the Current Operations Mode to range on the Impulse Operations screen. Answer No to the question "Initiate first pass of data collection?" See *System Operator User Guide* Chapter 5, *Impulse Operations* for instruction on how to do data collection.

Quarterly

Database Optimization

Database optimization takes a minute to start and two to three hours to run. Remember to take the wire links down before you begin this process. See *System Operator User Guide* Chapter 9, *Data Files* for an explanation of the database optimization options and instructions on how to use these utilities.

Clean tape drive heads

Use the kit supplied with the ACC-4000 Controller to clean the tape drive heads. The manufacturer recommends cleaning the tape drive heads every eight hours of tape drive operation. General Instrument estimates that this corresponds to once every quarter. Your system may vary.

Before a Major Pay-Per-View Event

Reboot the system

Make certain that you reboot the system **two days** before a major PPV event. A reboot takes ten minutes. See *System Operator User Guide* Chapter 12, *Control and Configuration Utilities* for instructions on rebooting your system.

Show Queues

Make certain that you show the queues on the scrambler to check every major PPV event. Show the queues at least 24 hours before the event. See *System Operator User Guide* Chapter 7 *Headend Equipment* for instructions on showing the scrambler queues.

DBQUICK Report

It is especially important that you run the DBQUICK report before a major PPV event because it confirms the number of converters that receive the authorization. The report takes less than five minutes to complete. You run this report from the Reports Menu (Main => Reports => Database Utilities => DBQUICK).

COMMONLY ASKED QUESTIONS

These are just a few of the more commonly asked questions about managing General Instrument equipment.

1. There are times when I need to know a variety of information about my converters.

   ? *How do I find out how many converters are on the system, how many are active, how many have HBO and other information about converters ?*

2. I ran DBSUMMARY and it tells me that I have "x" number of converters that have over 10 services.

   ? *Can I get a listing of these converters ?*

3. We have a big fight this weekend and marketing keeps asking how many people purchased the event. We ran DBSUMMARY but it takes a long time.

   ? *Is there a quicker way of getting the numbers ?*

4. We want to give everyone free remote, volume control, and some other features. We also want to change the purchase limit on the STARFONE to 8.

   ? *What is the best way to do this ?*

5. Some of our converters were entered with the 10-character serial number; others with the 12-character number.

   ? *What is the best way to give them all 10-character numbers ?*

6. A number of our converters were entered with the wrong converter type.

   ? *What is the best way to correct them ?*

7. We have to change and "punch" one of our channel maps. The one in question is used by 1,000 of our 30,000 converters.

   ? *What is the best way to do it ?*

8. The services on the billing system and the ACC-4000 do not match in some cases.

   ? *What is the best way to reconcile them ?*

COMMONLY ASKED QUESTIONS (Continued)

9. When the billing system deletes converters from its database, it does not send deletes to the controller. This means that there are converters on the ACC-4000, that are not on the billing system.

   ? *How do I identify them and delete them from the ACC-4000 ?*

10. We want to check a series of converters in a certain date range, such as J5A to J5G. The billing system lists the converters in serial number order; DBSELECT lists them in converter ID order.

    ? *Is there a program that will list the converters in serial number order ?*

11. Because of our billing system, we still have to package events. The screen are slow.

    ? *Is there another way to add and remove events from packages ?*

12. We still have some old events on our controller. The screen on the controller says that it could take five hours to delete them.

    ? *Is there a quicker way of deleting them ?*

13. Our billing system downloads the monthly events and PSL loads them, but only out 5 days. We have to keep checking PSL for errors every few days to make sure there are no errors.

    ? *How can we check a greater number of events, less frequently. ?*

14. Once events are loaded, we run READPS to print the pay services, run the screen report to print out the channel schedule, and then compare the two.

    ? *Is there a better way of doing this ?*

15. We do a data collection every day and run the data collection report. The report seems to be in random order sometimes and always prints lots of paper.

    ? *Is there a way of not printing so much paper ?*

Answers to Commonly Asked Questions

1. *Run DBSUMMARY.*
2. *Run DBSELECT.*
3. *Run DBQUICK. (Remember converters not subscribers)*
4. *Run DBCHANGE. Key off basic. (Remember change billing system)*
5. *Run DBCHANGE.*
6. *Run DBSSERIAL to get the serial number ranges: run DBCHANGE.*
7. *Change the channel map via screens and then run DBPUNCH.*
   Use DBPUNCH to re-hit converters at least 2-3 times because of truck status, light switches, etc.
8. *Go into refresh mode and/or do a billing system refresh.*
9. *Add a dummy service, run DBAPAYS, do a refresh, run DBQUICK to find converters still having dummy service and then run DBDCONVID.*
10. *Run DBPSERIAL.*
11. *Run DBPACKAGE.*
12. *It only takes 15 minutes for each 32K to delete via screens or run DBDPAYS.*
13. *Run PSLPRINT and DBSORTPS.*
14. *Run DBSORTPS.*
15. *Run DBPRINTDC.*

GLOSSARY

DMiller 1/13/94

This glossary provides definitions relevant to the ACC-4000. Industry standard terms (EISA, SVGA, RS-232, VAC, SCSI, and so forth) are not defined here. Cable terms included from the National Cable Television Association's glossary, the SCTE glossary, and the Jones Dictionary of Cable Terminology, and telephone industry terms from CED Magazine are marked as such.

A/B Cable — See Dual Cable.

4GL — Fourth Generation Language.

ACC-2000 — Addressable Controller Computer 2000.

ACC-4000 — Addressable Controller Computer 4000.

Accell — Brand name of the 4GL Operator Interface package used to implement the GUI interface on the ACC-4000.

Access Channels — Channels set aside by the cable operator for use by the public, educational institutions, municipal government or for lease on a non-discriminatory basis. (NCTA definition)

Access Control — A combination of access requirements and authorization rights, which may be thought of as lock and key, where access requirements are the lock and authorization rights are the key. Access Control controls legal access to services for which cable customers pay, and is enforced by means of security.

Address — A unique 21-bit, binary number assigned to each addressable device in the system which is used to select a specific device. It is transmitted in the Control Data Stream as four directly interpreted bytes (W3, W2, W1, and W0).

Addressability — The capability of controlling the operation of individual cable subscriber terminals by sending commands from a central computer (NCTA definition).

(1) a means of identifying and controlling delivery of programs or services to subscribers on a cable system. It involves computer control of converter devices in the subscriber's home.

(2) device with capability of responding to commands associated with a specific device identification code. (SCTE definition)

Addressable Controller — In a cable system which has PPV, the addressable controller is the computer which sends authorizations and other information to specific converters. The ACC-4000, ACC-2000, and MicroACS are General Instrument Addressable Controllers.

Adjacent Channel — TV channels are considered adjacent when their video carrier frequencies, either off-air or on a cable system, are 6 MHz apart. FM signals on a cable system are adjacent when their carrier frequencies are 400 kHz apart. (NCTA definition)

Aerial Plant	Cable that is suspended in the air generally on telephone or utility poles (NCTA definition).
Affiliate	The cable system to which a satellite service transmits its programming, usually by satellite. (NCTA definition).
Agile Data Receiver	Component of a converter that enables the converter to receive data on more than one frequency (only one frequency is used at any time).
AH-4	Addressable Headend (controller): predecessor to ACC-4000; the AH-4 is a PDP-11 running RSX, with the application written in Pascal.
AH-4E	Addressable Headend (controller), improved AH-4.
ANI	Automatic Number Identification: a system provided by the RBOC's where a caller's number is automatically identified for the receiver. Used by MSOs to identify subscribers for PPV ordering information. The ANI interface is at the telephone company. Incoming calls to the ANI number are validated against a list of authorized phone numbers, and if a match is found, the ANI interface computer forwards the phone number called (identifying which service is requested) and the phone number of the customer. The Customer Billing System at the cable system receives this information and sends the appropriate command over the Wire Link to the addressable computer.
ANIC	Adaptive Network Interface Card: a SCSI I/F card within the ACC-4000 used to convert and transmit data over the 14KB RF data stream.
ANSI	American National Standards Institute: A nonprofit, independent organization supported by trade organizations, industry, and professional societies for standards development in U.S.A. They represent U.S.A. to ISO; they defined ASCII.
Arbitron	A rating service which provides statistical information on viewing habits and demographics (NCTA definition).
Area of Dominant Influence (ADI)	Definition of a viewing market for ratings and sales purposes. An ADI market is composed of all counties in which the home market stations receive a majority of their viewing (NCTA definition).
ARU	Audio Response Unit: a voice mail type system where a cable subscriber can call the MSO and a menu type system will lead them through the process of: ordering a service or event, getting account information, etc. The ARU validates the request, then forwards the customer ID and service identifier to the Customer Billing System, which issues the appropriate command to the addressable controller.

Authorization Table	A RAM table located in each subscriber terminal which contains a list of ALL Service Codes for the system. Each entry records whether the terminal is allowed to descramble the incoming signal corresponding to that Service Code.
Authorized	If descrambling is allowed (i.e., via an entry in the authorization table), then the service code is said to be authorized. Conversely, if descrambling is NOT allowed, then the service code is said to be deauthorized.
AWG	American Wire Gauge: a standard system used for designating the size of electrical conductors; gauge numbers are inverse to size.
Babble	Undesired and unintelligible signals inadvertently imposed on a desired audio signal (Jones Dictionary).
Bandwidth	The portion of the radio spectrum needed to transmit pictures, sound, or both. U.S. TV stations use a bandwidth of six million cycles per second (6 megahertz). (NCTA definition)
Barker Channel	Cable channels established by the operator for access from a converter when requested to play services for which it is not authorized. Often, but not always, separate barker channels are set up for disconnected services, services not authorized due to parental control restrictions, subscriber services not requested, events not requested, terminals out-of-credit, initial power-up displays, etc.
Baseband Converter	A converter system which demodulates incoming cable RF signals to baseband for the purposes of decoding the tag data stream and of processing the baseband video/audio signal. After processing, the converter's microprocessor applies suitable controls to present the proper signal to the customer's TV system. Such signals include descrambled and remodulated video from the requested channel, from a barker channel, etc. Other signal sources could be generated within the converter itself, typically from its RAM or ROM memory via an internal character generator circuit.
Basic Cable	Usually the minimum amount of cable TV service available to a subscriber for a standard installation and monthly fee. It generally includes over-the-air broadcast signals and local origins. (NCTA definition).
Billing System	See Customer Billing Computer.
Bird	Colloquial for communications satellite.
Broadband Communications System	Frequently used as a synonym for cable TV. It can describe any technology capable of delivering multiple channels and services. (NCTA definition)
Cable Data, Format '5'	old AH-1, 2, 2E format (type 60).
Cable Data, Format '9'	AH-4, ACC-2000, ACC-4000 format (type 260).
Cable Data, Format 'J'	A1-0, AH-4, ACC-4000 format (type 170).

Cablecasting	The use of a cable system or a satellite programming service to provide certain types of programming. (NCTA definition).
Cable Penetration	The percentage of TV homes subscribing to cable TV. (NCTA definition)
Cable Television	A communications system that distributes broadcast TV signals plus satellite signals, original programming, and other material by means of a coaxial cable and / or optical fiber. (NCTA definition).
CARS	Cable Television Relay Services, a microwave system used to relay TV, FM radio, cablecasting, and other signals to a terminal for distribution over cable. (NCTA definition)
CATA	Community Antenna Television Association; a national trade association generally representing smaller cable TV operators. (NCTA definition). Often referenced in relation to type of coaxial cable used for data transmission.
CBC	Customer Billing Computer; used by CSRs to enter subscriber data, which is forwarded to the addressable controller via the commands defined by the Wire link protocol.
CCITT	(Consultative Committee for International Telephony and Telegraphy; Comite' Consultatif Internationale de Telegraphie et Telephonie). An international association that sets world-wide communications standards, such as V.21, V.22, X.25, etc.
Channel	To avoid confusion, it is best to refer to "Communication Channels," referring to control connections between converters and the controller, and to "Service Channels," referring to the frequencies which provide specific services to subscribers.
Channel Capacity	The maximum number of channels that a system can carry simultaneously. (NCTA definition)
Channel Map	See Cross Reference Table.
Channel Poll	See Viewership Monitoring, a feature to be implemented in the future.
Churn	The percentage of cable TV subscribers that add or delete program services, or cable service entirely. (NCTA definition)
Coaxial Cable	The actual line of transmission for carrying TV signals. Its principal conductor is either a pure copper or copper coated wire, surrounded by insulation and then encased in aluminum or copper. (NCTA definition)
Cold Converter	A converter which has not been initialized (vs. a Hot Converter).
Common Carrier	The generic name for any medium which carries messages prepared by others for a fee and is required by law to offer its services on a non-discriminatory basis. Also, common carriers are regulated by federal and state agencies and exercise no control over message content. (NCTA definition)

Compression	The act of reducing the amount of bandwidth needed to carry audio and/or video signals. Either analog or digital compression is technically possible. (NCTA definition)
COMSAT	The Communications Satellite Corporation, a privately owned common carrier operating under a congressional mandate to provide commercial communications satellite services. (NCTA definition)
Control Data Channel (CDC)	A stream of 8-bit characters sent by the addressable controller to manipulate various devices in an addressable cable system. Contains global, group, and specifically-addressed commands to converters and transcoders. Changes to authorizations reside on this channel. Its physical carrier may be in-band or out-of-band. Examples of devices controlled include converters, scramblers, data commanders, etc. In the addressable control system's Control Data Stream, all data is FSK-modulated (+/- 75 KHz deviation) using Manchester encoding. The serial data is transmitted at a rate of 13.985 Kbits per second using a start bit, 8 data bits, odd parity, and one stop bit.
Control Data Stream	The Control Data Stream is that serial data stream generated by the addressable controller for downstream transmission to headend equipment and to converters. It also includes upstream data sent by headend equipment and by converters back to the addressable controller. As necessary, it is transmitted in the system using three different formats: o Baseband. o Downstream FM (modulated onto an FM carrier). o Upstream FM (modulated onto an FM carrier).
Controller	(AH-4, ACC-4000, ACC-2000, Micro-ACS are all General Instrument Controllers): basic purpose is access control for pay services. Provides the cable system operator with various controls, messaging capabilities, and statistics/reporting. Provides an interface for Billing Systems.
Converter	A device that, associated with a TV set, can increase the channel load of the TV set. (NCTA definition)
Converter ID (CONVID)	This either refers to the serial number of the converter, or to the serial number plus the site code. The site code plus the serial number must be unique within the cable system.
Converter Signature	Unique binary value assigned to a converter at initialization.
Credit Management	Some converters keep track of credit limits for their subscribers, and refuse to accept purchases which exceed the limits. Credit management may be performed via the addressable controller, but typically the Customer Billing Systems use the Wirelink to send credit authorizations, changes, etc., to the controller, which sends revised credit limits to the converters.
Cross Reference Table	A table located in each terminal which identifies that RF (tuned) channel to use for each allowed-user channel number.

CSR	Customer Service Representative: a cable company employee who deals with subscribers at the front counter or answers telephone calls from subscribers. The CSR will use the Customer Billing System to validate requests and send appropriate orders to the addressable controller.
Customer Billing Computer (CBC)	Computer systems used by CSRs that interface to General Instrument controllers via the Wire Link protocol.
Cable Video Store (CVS)	Enterprise to provide movies via cable.
Cycle Time	Time required to address every converter in the system.
Datasteam	In the context of addressable controllers, the datastream is the data which flows through a physical connection between the controller and the cable system. Currently, for analog cable systems, all outbound and inbound packets (going through the ANIC) are controlled via JADS (Jerrold Addressable Data Stream), a General Instrument protocol specification (restricted distribution).
DBS	Direct Broadcast Satellite: a proposed system in which signals are transmitted directly from a satellite to a home rooftop receiving dish. DBS refers specifically to high-power transmissions in bands specified by the FCC, rather than current C-band in which home satellite dishes receive. (NCTA definition)
DCR	Digital Cable Radio, providing 50 channels of CD-quality sound over a cable system. DCR was founded by Jerrold, and is now owned partly by several cable and entertainment companies.
DCT	DigiCable Consumer Terminals.
Decryption	Refer to the definition for "Encryption."
Descrambler	An electronic circuit that restores a scrambled video signal to its original form. (NCTA definition)
DigiCable	Digital Cable, a General Instrument program for developing cable system equipment and software which will have digital transmission to the converter box. (Current systems are analog.) TCI is our customer for DigiCable.
Direct ANI	A phrase used to describe a system configuration where the addressable controller is connected directly to the ANI.
Dish	The installation, also called an earth station, for receiving and/or transmitting electronic signals between the earth and communications satellites. (NCTA definition)
Displayed Channel Number	The interpretation of the channel number which is displayed by the LEDs and on the Channel Status Display Screen. The LED display does not always show a channel number, but when it does, this is the number displayed.
Distant Signals	A TV channel from another market imported and carried by a cable TV system. (NCTA definition)

Downstream	The flow of signals from the cable system headend through the distribution network system to the subscriber. (NCTA definition). Transmission of the data stream from the master (i.e., an addressable controller) to a slave (i.e., a converter, commander, scrambler, etc.). Downstream capability is required in all addressable cable systems.
DP	Jerrold Downloadable Converter Plus.
DRAM	Dynamic Random Access Memory which must be refreshed regularly (as opposed to static RAM).
Drop Cable	The small-diameter cable feeding into the subscriber's home (NCTA definition)
DRX	Jerrold Remote Control converter, 400 MHz.
DRZ	Jerrold Digital Remote Control converter (vs. set-top control connected by cord), 450 MHz.
DRZD	Jerrold Digital Remote Control converter with Dynamic scrambling capability, 450 MHz.
DRZID	Jerrold Digital Remote Control converter with Infrared control and Dynamic scrambling, 450 MHz.
DRZIN	Jerrold Remote Control converter with Infrared Control and Non-volatile memory, 450 MHz.
DRZP	Jerrold Remote Control converter with Remote control and Parental control, 450 MHz.
DS/E	Digital Scrambler/Encoder.
Dual Cable	Two independent distribution systems operating side-by-side providing double the channel capacity of a single cable. Is also referred to as A/B cable. (NCTA definition)
Earth Station	A structure, referred to as a "dish," used for receiving and/or transmitting signals to or from a satellite. (NCTA definition)
EEPROM	Electronically Erasable Programmable Read Only Memory. A device that can be erased electrically and reprogrammed.
EIA	Electronics Industries Association. A standards organization in the U.S. specializing in electrical and functional characteristics of interface equipment.
EISA	Extended Industry Standard Architecture: A 32-bit adaptation of the 8- and 16-bit buses originally developed by IBM and now standard in almost all PCs using INTEL 8086 and 80x86 microprocessors (jointly developed by several other PC manufacturers).
Embedded Data Stream	A generic term referring to a control data stream which is sent as part of (or "embedded" within) a larger data stream.

Encryption	A term referring to operations performed on a data stream designed to prevent its use by illegal terminal devices attached to the cable system. Multiple encryption schemes are used in Jerrold equipment (i.e., standard vs. enhanced encryption) for different types of data streams (i.e., FM vs. TAG data streams). Encryption is, inherently, a digital process applied to digital signals. (Note: encryption is not the same as scrambling.)
Encryption Key	One of two keys (7-bits standard, 28-bits enhanced) maintained by the addressable controller and sent to downstream terminals. They are used primarily to decrypt incoming tag data placed onto a service's RF signal.
EPROM	Erasable Programmable Read Only Memory. Storage device which can have contents modified by erasing with ultra-violet light and reprogramming; can be done repeatedly.
EROM	Erasable Read Only Memory.
Event	A single PPV service provided to cable subscribers beginning at a specified time and lasting for a pre-determined interval. Typically, subscribers are allowed to "purchase" an event within a time window prior to the event or just after it starts up. "Pre-subscription" techniques also exist wherein a subscriber can request the event days (or weeks) prior to its showing. Each event is identified by a subscriber terminal via its assigned Service Code (usually an 8-bit number ranging from 129 to 256). An event can also be a set of services purchased as one unit.
Event Authorization	A process wherein a terminal receives permission to decode a signal on a cable channel beginning at the event's specified time and lasting for the duration of the event. Each event is identified by its Service Code.
Event Key	An access code used by the customer to purchase services.
Exclusivity	The contractual right to be the sole exhibitor of a program in a particular area during a particular time. (NCTA definition)
Expanded Basic	More than one cable service offered to the subscriber at a charge in addition to the basic cable service. (NCTA definition)
Fast Poll Format	A polling discipline used by the Addressable Controller on the Control Data Stream to request data sequentially from multiple terminals per poll cycle. The terminals are required to respond within specified time windows while the controller is in the process of sending the poll. For 2-way addressable cable systems, in the absence of other data stream traffic, the Addressable Controller continually performs fast polls.
Favorite Channel (FC)	Feature of cable TV converters: enables subscriber to program a key on the handheld so it tunes to a specified channel.
FCC	Federal Communications Commission is involved with any radio-transmitted communications and equipment which can interfere them, as well as with regulation of broadcast content.
FM	Frequency Modulation (vs. AM).

FM Cable Service	The offering of FM radio signals over a cable system; the cable must be connected to the subscriber's FM receiver. (NCTA definition) For more information, see DCR.
FoneWay	2-way over phone lines.
Frequency Map	A list of frequencies available for transmission on the cable plant. These frequencies are used for standard services (i.e., basic services, subscriptions, etc.), for PPV services, and for NVOD offerings (promotion channels or movie channels). Each frequency is identified in the system by its offset (referred to as its tuned channel) into this map.
Geo Code	A 3-bit, binary number, taken from the 3 MSbits of a device's address, typically used by Cable Operators to specify devices within pre-defined geographical areas. These areas can, for example, represent all terminals homing onto a particular headend subsystem. The geo code is transmitted within Control Data Stream commands as the directly interpreted byte, W3.
GUI	Graphical User Interface
HBO	Home Box Office : an enterprise which provides cable subscribers with movies.
HDTV	High Definition TeleVision: a higher quality television signal when compared to the present NTSC system. (SCTE definition)
Headend	The electronic control center of the cable system. This is the site of the receiving antenna and the signal processing equipment (NCTA definition)
Hot Converter	A converter which has been initialized in the cable system warehouse, but which has not been installed (vs. cold converter).
IBB	In-Band-Barker.
IEEE	Institute of Electrical and Electronic Engineers: an international professional society that issues its own standards and is a member of ANSI and ISO.
In the Clear	Transmitted without scrambling.
In-Band OSD Data	OSD information sent to a converter via the signal's Service Data Channel. Typically, this information gives service-specific details which are used in the converter to provide user-friendly information on the screen.
Indirect ANI	A phrase used to describe a system configuration where the Billing System is connected directly to the ANI and the addressable controller receives order information from the Billing System.
Initialization	That process by which data is loaded into a new converter to customize its operation for use by a customer in a particular cable system. Typically, during this process the controller sends reset and initialize commands along with configuration and terminal control bytes.

Interactive	A sophisticated two-way system which has the capability of connecting more than two points. Warner Amex's Qube system in Columbus, Ohio was the country's first interactive system. (NCTA definition).
Interconnect	The transmission of cable signals or advertising from one cable system to another so that programming and information may be shared. (NCTA definition).
Inventory Control	Security procedures involving Hot and Cold converters, to prevent lost or stolen converters from gaining access to the system.
IPPV	Impulse Pay-Per-View - Subscriber converter accepts an order from the subscriber and forwards it to the controller.
IR	InfraRed (IR light is used by handheld units to send signals to converters). Converter IR capability is controlled by the addressable controller.
ISA	Instrument Society of America.
ISO	International Standards Organization. An international organization for promoting the development of standards for computers.
Leased Channels	Any channel made available by the operator for a fee. (NCTA definition).
Limited Basic	The minimum service available on some systems, usually consisting of local broadcast signals and originations. (NCTA definition)
List Format	One of the command formats used on the Addressable Control Data Stream. Its primary distinguishing characteristic is that it provides downstream data transmission whereby commands are sent to multiple terminals per-list-cycle.
Local Origination Programming (LO)	Programming leased, developed, or purchased by a cable TV system for the community it serves. (NCTA definition)
Local Signals	Over-the-air broadcast signals available within the community, usually carried on a cable system's minimum service level of programming. (SCTE definition)
MATV	Master Antenna Television System, see SMATV.
MDS	Multipoint Distribution Service: a private service utilizing a very high frequency to transmit one TV signal. Its most common function is to broadcast pay TV. (NCTA definition)
Messaging	Present cable systems provide messages to groups of converters or individual converters. These messages include barkers, individualized messages, etc. We expect more messaging services to be developed in the future.
Micro ACS	Microcomputer-based Addressable Controller System: Controller for General Instrument TOCOM systems.
Microwave	A transmitting system that relays signals from one tower to another, linking cable systems or other services.

Minimum Channel Capacity	The minimum number of 6 MHz channels that can be carried on a particular cable system simultaneously. (NCTA definition)
MMDS	Multichannel Multipoint Distribution Service: an MDS service with the capability of transmitting more than one TV signal. Also known as wireless cable. (NCTA definition)
MODEM	MODulator/DEModulator.
MPEG	Moving Pictures Experts Group: a group formed in 1988 to establish an international standard for the coded representation of moving pictures and associated audio stored on digital storage format.
MSO	Multiple System Operator: a company that owns and operates more than one cable system. Also called a "group operator." (NCTA definition)
MTBF	Mean Time Between Failures; Mean Time Before Failure.
MVP	Modulating Video Processor (a General Instrument scrambler).
Narrowcasting	The delivery of specialized programming to a specific audience. (NCTA definition)
NBS	National Bureau of Standards.
NEC	National Electrical Code of regulations for construction and installation of electrical wiring and apparatus, suitable for mandatory application by wide range of state and local authorities.
NCTA	National Cable Television Association: the major trade association for the cable TV industry.
NEMA	National Electrical Manufactures Association.
OBB	Out-of-Band Barker.
Off-Air	Refers to programming received at the cable system headend from over-the-air stations (NCTA definition).
Order	An order occurs when the subscriber requests a purchase either immediately or at some future time. The order becomes a purchase when the converter tunes a channel per the order. An order is not collected via the data collection process.
OSD	On-Screen Display.
Out-of-Band OSD Data	OSD information sent directly to a converter via the control data channel. Typically, the out-of-band OSD channel is used to supply NVOD menu screen templates to the converters.
Package	One set of events, subscriptions, or a combination of PPV events and subscriptions (for instance, a package containing a series of baseball games).

Parental Control (PC)

A converter feature that requires entry of a password in order to activate certain converter features. The parent (or anyone who knows the password) can set or remove scrambling or encryption on any channel. The password is entered by the customer and saved in the converter's non-volatile memory. If customers forget their passwords, they can call the MSO, who will issue a command to clear (reset) the parental control keys for the specific converter.

Pay-Per-View (PPV)

Cable programming for which subscribers pay on a one-time basis for individual programs, such as prize fights, Broadway, and movie premieres. (NCTA definition. Occurs via one of the following methods:

- ❑ via CSR: the subscriber calls the cable operator and a CSR enters the order on the Billing System.
- ❑ via ARU: the subscriber calls the cable operator and an ARU leads them through the process of ordering the service or event.
- ❑ via ANI: the subscriber calls a specific number for specific event and is automatically identified by the ANI system
- ❑ via Two-Way Converter: the subscriber enters the purchase directly into the converter, which reports purchases during data collection.

Pay Programming

Movies, sports, and other programs available to the cable subscriber for a charge in addition to the basic fee. (NCTA definition)

Pay Service Loader (PSL)

A service which cable systems purchase, which provides files of pay service schedules (for instance, HBO movies/times/channels). These files may be uploaded into the addressable controller, thereby saving operator time in entering the schedules manually.

Pay Units

A total count of the number of individual pay subscriptions sold by a cable operator for one (1) or more pay programming services. (NCTA definition)

PC Controlled Resource

This term refers to any user channel that is also below the wrap point. The viewer selects PC controlled channels via an OSD screen that, in turn, are reachable only while the converter is unlocked.

When the converter is PC-locked, any attempt to access a PC-controlled channel results in a request for the PC password. Successful password entry, in turn, unlocks the converter and tunes the requested channel. After unlocking the converter, access to any channel (i.e., below the wrap point) is provided without the password request.

PC Lock

This term refers to the PC status of the converter itself. A converter is locked either via an OSD menu screen or by turning OFF the unit. When locked, the converter:

- ❑ Prohibits access to PC control resources without correct entry of the PC password.
- ❑ Prohibits access to the password entry screen without correct entry of the current PC password.
- ❑ A converter is unlocked either via an OSD screen or by successful password entry when access to a PC-controlled resource is attempted.

Penetration	The ratio of the number of cable subscribers or pay TV subscribers) to the total number of households passed by the system (or basic subscribers). (NCTA definition)
Pole Attachments	The cable TV hookups to telephone or utility poles. (NCTA definition).
Polling	Set of utilities to obtain statistics about subscriber preferences. The user interfaces contain polling options (do not confuse these with fast polls, which are part of the data collection process).
PPV	See Pay Per View.
Preview	A period of time during which a non-authorized terminal is allowed to descramble and/or view a purchasable service. The "Preview Indicator" is transmitted to a converter in the tag data stream. It is often used to allow a customer to view the service for a short period of time - to give him/her time to decide on a purchase.
Preview Period	That time period beginning immediately after a showing starts during which all unlocked converters are authorized to descramble a CATV signal. This information is carried on TV signals via the in-band Service Data Channel. The preview time, independently configurable by the controller for each offering, enables *surfers* to preview the beginnings of NVOD movies for a possible purchase.
PROM	Programmable Read Only Memory: Storage device in which data are accessed on demand, but not changed.
Punch	One downstream message (from controller to converters). Punches may be sent to single converters, groups of converters, or globally to all converters. A punch encloses one command or part of a command. There may be many punches associated with one action (such as an init command).
Purchasability Window	That period of time after a new showing begins where it can be purchased by a viewer. This time period is specified in the movie's data base and may range from zero to the movie's total length.
Purchase	Occurs when the converter tunes a channel per an order placed by the subscriber. The purchase is a series of data elements loaded into the transaction table. Purchases are collected via the data collection process. (See Order.)
RAM	Random Access Memory. Storage device into which data can be entered (written) and read; memory is volatile and data will be lost if power is removed.
RF	Radio Frequency.
RF Channel	Any Radio Frequency channel; avoid this term, since it is used differently and leads to confusion.

RF Converter	A set-top converter system which converts selected cable RF signals directly to the desired frequency for use by the customer's TV system (i.e., only RF processing is performed on the video signal). This scheme does NOT preclude the use of the addressable control data stream within the converter, since it is carried on the cable by a different RF carrier.
RFI	Radio Frequency Interference.
ROM	Read Only Memory. Storage device with permanent memory; cannot write over.
RSX	Operating system on PDP/11 and VAX hardware, used by AH-4 series addressable controllers.
Scrambling	A term referring to operations performed on an RF signal designed to prevent its use by illegal terminal devices attached to the cable system. Multiple types of RF Scrambling techniques are in use. Scrambling is, inherently, an analog process applied to analog signals. (Note: scrambling is not the same as encryption.)
SCX Card	See SCX11.
SCX11	A data transmitter module interfacing the controller with the CATV system. Physically located in the processor card cage and containing the authorization lists transmitted to subscriber converters. Each addressable system controller requires at least two of these modules.
SDC	Service Data Channel: contains channel tagging information such as service code, IPPV cost, and program key. Physically, this channel resides on the same carrier (HSI) as the video service being descrambled.
Second Channel Interference	See Alternate Channel Interference
Security	In the context of cable television, Security includes a variety of techniques to prevent theft of services. In the context of controllers, Security is the set of techniques which enforce access control.
Serial Number	A unique 10-digit number assigned to each terminal at the factory. It is programmed into non-volatile memory, making it available to the terminal's CPU. Its value is important during initialization, since the addressable controller uses it to assign a logical address to the terminal.
Service Code	Also called a TAG. Is a unique 8-bit code assigned to each event which is used to control descrambling. A customer purchase essentially causes the appropriate service code to become authorized. Subsequently, when viewing a CATV signal whose Service Data Channel contains that service code, the converter attempts to descramble the picture. Codes between 1 and 128 generally represent subscription services; and codes between 129 and 256 generally represent cable events.

Service Data Channel
The Service (i.e., Tag) Data Channel transports the serial data stream generated by the MVP via transmission with the TV signal to converters. It is transmitted, 24 bits at a time, during the VBI between two specific horizontal blanking pulses.

Service Number
Used to identify video services provided by the cable system. Currently this field has a range of 1-8191.

Shop-at-Home
Programs allowing subscribers to view products and/or order them by cable, including catalogs, shopping, shows, etc. (NCTA definition)

Show Channel Increment
That period of time between each channel of the movie. It is determined primarily by the total number of channels carrying the movie and the movie's length.

Depending on the tape's physical rewind time and, at the end of the movie, the time remaining in the last show channel increment, an additional increment may be required. This increment, if needed, allows the tape rewind to complete.

Signature
A binary word (14-bit standard vs. 28-bit enhanced) used in the terminal's encryption scheme. It is a random number selected by the addressable controller upon terminal initialization and is transmitted on the network ONCE (one message standard vs. two messages enhanced). This word is used primarily to secure the transmission of encryption keys to the terminals.

Site Code
A 12-bit, binary word assigned (usually) to all terminals addressed by a specific controller. When not assigned, all terminals ignore this code. When assigned, however, terminals validate incoming messages against this code. It is transmitted on the network in four (4) directly interpreted bytes (D3, D2, D1, and D0) - three LSbits per byte. The site code prohibits a terminal in one cable system (or subsystem) from being used on another without proper authorization. An alternate term for Site Code is, "System Password."

SMATV
Satellite Master Antenna Television System: a system that serves a concentration of TV sets (such as an apartment building, hotel, etc.) utilizing a central antenna or antenna to pick up signals. (NCTA definition)

StarFone
General Instrument converters with telephone (Fone-way) return path (vs. StarVue).

StarVue
Generic term for General Instrument converters with 2-way RF return path (vs. StarFone).

Sub-band
A range of frequencies (i.e., 5 to 30 MHz.) where upstream data is transmitted.

Subid (SUBID)
Subscriber Identification: See Converter Identification.

Subscriber
A person who pays cable system operators for the reception of programs and other electronic services. (NCTA definition)

Subscription
Unlimited access to one PPV channel.

Subscription Authorization	A process wherein a terminal receives permission to decode a particular subscription service on an indefinite basis. Each service is identified by its Service Code.
Subscription Service	A single service provided to cable subscribers after notifying the cable company of the desire to "subscribe." Such services remain active in a terminal indefinitely, allowing the customer to utilize the service on demand. Each service is identified in a subscriber terminal via its assigned Service Code (usually an 8-bit number ranging from 1 to 128).
Surfing	A customer surfs by scanning channels, looking for unscrambled previews from which a purchase is made. Any customer performing this type of movie selection process may scan across normal CATV channels, PPV channels, NVOD show channels, and NVOD promo channels.
Sybase	The relational SQL database used within the ACC-4000 to maintain information on converters, subscribers, pay services, etc.
Syndicated Exclusivity	An FCC rule requiring cable systems to black out portions of distant signals in order to protect syndicated programming which local TV broadcasters have under an exclusive contract (NCTA definition).
System Password	Refer to the definition for "Site Code." (Note: Not the same as ACC-4000 Super User password.)
Tag	Data appended (i.e., "tagged") to a video signal and transmitted with the signal to its destination. In general, this data represents a limited subset of information passed in the total tag sequence.
Tag Data Stream	Same as the Service Data Channel.
Tag Sequence	The group of all tags that make up all information required to enable scrambling and pay-per-view type services. The tag sequence is different for different types of tags; however, basic information content is *similar* (additional details are given in the definition of the Service Data Channel).
Tags	A tag is an 8-bit value (range 1-256) which uniquely identifies a video signal. (For DigiCable, there may be more bits available for a larger range of tag values.)
TC	Tuned Channel number: the value that is input into the FREQUENCY MAP. For firmware, the TC is the "logical tuner" even though the algorithm for setting the tuner contains several mapping sections.
Terminal Concentrator	An 8-port multiplexer provided with the ACC-4000.
Terminal Control Byte (TCB)	This byte, part of various Wire link commands, sets various converter options such as Remote, Volume Control, Parental Control - Locked, etc.
Theft-of-Service	Obtaining cable television service without the consent of the cable operator and without paying for the service (SCTE definition).

Third-Party Services	In future systems, approved third-party services will be provided via the cable system. These may be offered as part of the basic services package, or access control may be applied in the same way as PPV and IPPV services.
Tier	As provided by the addressable controller, tiers provide a method for authorizing services to converters. The controller sends tier information to the converter. The converter uses the tier information to determine whether or not to provide access to particular services. Tier space may be an issue to be addressed in system administration of future systems. Note that Tier means different things to GI - Hatboro and GI - La Jolla. In La Jolla, Tier refers to what Hatboro thinks of as "service code." Check context before using this term.
Tiered Programming	More than one cable service offered to the subscriber at a charge in addition to the basic cable service. Also known as expanded basic. (NCTA definition)
TLE	Transmission Line Equalizer, Adds delays to H/W legs of distribution channel.
TNA	Telephone Network Adapter - Takes the 14Kb data stream from the ANIC and converts it to 9600 baud for transmission over conditioned telephone lines via an internal V.33 modem.
TOCOM	General Instrument design/manufacturing group in Carrollton, Texas.
Transaction	A Two-Way Punch, Specific. (Except for global bug fix.)
Transaction Table	A table of transactions being held in the terminal for transmission to the addressable controller. Entries can include items such as customer requests for service and customer poll responses as well as responses to specific controller commands. After they have been received by the controller, the terminal is requested to clear the "sent entries."
Transponder	The part of a satellite which receives and transmits a signal. (NCTA definition)
TRC	General Instrument's Technical Response Center.
TTn (or ttn)	Teletype Terminal Number n, for identifying terminals or ports (i.e., tt0, tt1, tt2).
Tuned Channel Number	An 8-bit number (1 through 161) used as an offset to index into the list of cable frequencies available in the system's frequency map. When used to index into the converter's frequency map, the corresponding cable frequency can be identified. Using this information, hardware parameters needed to control the tuner are determined.
Two-Way	A term used to describe a cable system that enables signals to pass in both directions between the headend and the subscriber. (NCTA definition)
UC	User Channel Number: the channel number input into the CHANNEL CROSS REFERENCE MAP.
UHF	Ultra High Frequency.

Underground Installation	The burying of cable underground, as opposed to aerial suspension on poles. (NCTA definition)
UNIX	Operating System designed originally by AT&T for communicating multi-user 32-bit minicomputers, which has become widely accepted because of its versatility.
UPS	Uninterruptable Power Supply.
Upstream	Transmission of the data stream from a slave (i.e., converter, commander or scrambler) to the master (i.e., an addressable controller). Transmission usually takes place within the sub-band frequency range. Upstream capability is required in two-way addressable cable systems.
User Channel Number	An 8-bit binary representation of the displayed channel number. When converted to binary and used to index into the converter's cross reference table, the corresponding tuned channel number can be identified.
VBI	(See Vertical Blanking Interval).
VCR	Video Cassette Recorder, a device used to record and playback images on magnetic tape, packaged in a cassette. (NCTA definition)
Vertical Blanking Interval (VBI)	The unused lines in each field of a television signal, seen as a thick band when the television picture rolls over usually at the beginning of each field, which instruct the television receiver to get ready for the reception of the next field. Some of these lines may be used for teletext and captioning, or may contain specialized test signals. (Jones Dictionary)
VGA	Video Graphics Array.
VHF	Very High Frequency.
Viewership Monitoring	Feature to be implemented in the future. Will provide statistics about how many viewers are using specific services.
Wireless Cable	(See MMDS).
Wire Link	A protocol/command set defined by General Instrument for communications between Customer Billing Systems and addressable controllers.
WOM	Write Only Memory.
WORM	Write Once, Read Many (optical disk).
Y-Box	A PC which runs the Wire Link Widget (WLW) software, connecting more than one addressable controller to a Customer Billing Computer via Wire Link.

MESSAGE EDITOR SYSTEM/ MESSAGE MANAGEMENT

OVERVIEW

General Instrument

MESSAGE EDITOR SYSTEM

- **Used to create messages for viewing by selected or global subscribers**

- **Messages created on PC, requires:**
  - **MS-DOS 5.0 or higher**
  - **Windows 3.0 or higher**

- **Transferred to ACC-4000 by:**
  - **Serial Transfer**
    - **Serial Link**
    - **Modem**
  - **3.5 Diskette**

NOTES:

MESSAGE MANAGEMENT

- **For scheduling broadcasting of messages, created using Message Editor**
- **Part of the ACC-4000 software**
- **Sent to On Screen Display (OSD) Set - Tops**

NOTES:

MESSAGE TYPES

There are four different message types, each having a specific purpose.

They are:

- **Stored Messages**
- **Out-Of-Band Barkers**
- **Pay-Per-View Confirmations**
- **In-Band Barkers**

NOTES:

STORED MESSAGES

- **Messages stored in the memory of the Set-Top**
- **Used for displaying holiday greetings, community service announcements, etc.**
- **Message characteristics include:**
  - **Message Light Indicator**
  - **Instant On**
  - **Erasable**

NOTES:

IN-BAND BARKER

- Message broadcasted as part of the Vertical Blanking Interval (VBI)
- Used for IPPV events
- Can be shceduled for display during the four different viewing modes
- The modes are:
  - Interstitial
  - Preview
  - Scrambled/Purchasable
  - Scrambled/Not Purchasable

NOTES:

PAY-PER-VIEW CONFIRMATION

- Message that confirms a subscriber is authorized for a PPV event

- Designed for:
  - One-Way purchases, not IPPV
  - Advance purchases

NOTES:

OUT-OF-BAND BARKERS

- Customizable messages that can be displayed when one of seven barker conditions occurs
- Scheduled and defined in an OBB map
- The seven barker conditions are:
  - Event
  - Disconnected
  - Deauthorized
  - Parental Control
  - Power On
  - Out of Credit
  - NVOD Access Channel (CFT 2900 Only)

NOTES: